No. 88-1845

Supreme Court, U.S.
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IN THE

Supreme Court of the United States

OCTOBER TERM, 1988

NEW JERSEY CHAMBER OF COMMERCE; CHEMICAL INDUSTRY COUNCIL OF NEW JERSEY; NEW JERSEY BUSINESS AND INDUSTRY ASSOCIATION; CHEMICAL SPECIALTIES MANUFACTURERS ASSOCIATION, INC.; MERCK & CO., INC.; MAGNESIUM ELEKTRON, INC.; C.P. CHEMICALS, INC.; EXXON CHEMICAL AMERICAS, a division of EXXON CORPORATION; SCHERING CORPORATION; ESSEX CHEMICAL CORPORATION; INGERSOLL-RAND COMPANY; AND SHELL CHEMICAL COMPANY, a division of SHELL OIL COMPANY, *Petitioners*,

v.

ROBERT E. HUGHEY, Commissioner of Environmental Protection; J. RICHARD GOLDSTEIN, M.D., Commissioner of Health and WILLIAM VAN NOTE, Acting Commissioner of Labor and THE STATE OF NEW JERSEY,
Respondents.

APPENDIX TO PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE THIRD CIRCUIT

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APPENDIX A

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

Nos. 88-5283, 88-5332

NEW JERSEY CHAMBER OF COMMERCE, CHEMICAL INDUSTRY COUNCIL OF NEW JERSEY, NEW JERSEY BUSINESS AND INDUSTRY ASSOCIATION, CHEMICAL SPECIALTIES MANUFACTURERS ASSOCIATION, INC., MERCK & CO., INC., MAGNESIUM ELKETRON, INC., CP CHEMICALS INC., CHEM-MARK, INC., EXXON CHEMICALS AMERICAS, a division of Exxon Corporation, SCHERING CORPORATION, ESSEX CHEMICAL CORPORATION and INGERSOLL-RAND COMPANY, and SHELL CHEMICAL COMPANY, a division of Shell Oil Company,

New Jersey State Chamber of Commerce, Chemical Industry Counsel of New Jersey; New Jersey Business and Industry Association; Chemical Specialties Manufacturers Association, Inc.; Merck & Co., Inc.; Magnesium Elektron, Inc., Exxon Chemical Americas, a division of Exxon Corporations; Ingersoll-Rand Company; and Shell Chemical Company, a division of Shell Oil Company,

Appellants in No. 88-5283

v.

ROBERT E. HUGHEY, Commissioner of Environmental Protective; J. RICHARD GOLDSTEIN, M.D., Commissioner of Health and WILLIAM VAN NOTE, Acting Commissioner of Labor and THE STATE OF NEW JERSEY,

Appellees in No. 88-5283

FRAGRANCE MATERIALS ASSOCIATION OF THE UNITED STATES; FLAVOR AND EXTRACT MANUFACTURE'S ASSOCIATION, BUSH BOAKE ALLEN, INC., FRAGOCO, INC., FIRMENICH, INC., INTERNATIONAL FLAVORS AND FRAGRANCES, INC., ISOGENICS, INC., H.J. KOHNSTAMM & CO., INC., V. MANE FILS, INC., NOVILLE ESSENTIAL OIL COMPANY, INC., POLAROME MANUFACTURING CORP., ROURE BERTRAND DUPONT, INC., TAKASAGO USA INC., UNGERER & CO., AND UNIVERSAL FRAGRANCE CORPORATION,

Appellants in No. 88-5332

v.

WILLIAM VAN NOTE, Acting Comissioner for the State of New Jersey; J. RICHARD GOLDSTEIN, Comissioner of Health for the State of New Jersey; ROBERT E. HUGHEY, Commissioner of Environmental Protection for the State of New Jersey,

Appellees in No. 88-5332

and

JOSEPH H. RODRIGUEZ, Public Advocate of the State of New Jersey; NEW JERSEY STATE INDUSTRIAL UNION COUNCIL, AFL-CIO (IUC); CITIZEN ACTION OF NEW JERSEY; PHILADELPHIA AREA PROJECT ON OCCUPATIONAL SAFETY & HEALTH (PHILAPOSH); NEW JERSEY ENVIRONMENTAL LOBBY; NEW JERSEY STATE FIREMEN'S MUTUAL BENEVOLENT ASSOCIATION (FMBA); INTERNATIONAL ASSOCIATION OF FIREFIGHTERS, NEW JERSEY AFL-CIO (IAFF); COMMUNICATION WORKERS OF AMERICA, & GLASS WORKERS INTERNATIONAL UNION, AFL-CIO, LOCAL 514-G; PENNSYLVANIA FEDERATION BROTHERHOOD OF MAINTENANCE OF WAY EMPLOYEES, AFL-CIO; COALITION AGAINST TOXICS; LEAGUE OF CONSERVATION VOTERS (NEW JERSEY); STUDENT PUBLIC INTEREST RESEARCH GROUP OF NEW JERSEY (N.J.

PIRG); ENVIRONMENTAL ACTION (Washington D.C.); LEAGUE OF WOMEN VOTERS OF NEW JERSEY; SIERRA CLUB (New Jersey); AMERICAN LUNG ASSOCIATION OF NEW JERSEY; NEW JERSEY TENANTS ORGANIZATION (NJTO); NEW JERSEY ASSOCIATION OF COUNTY HEALTH OFFICERS; and NEW JERSEY HEALTH OFFICERS ASSOCIATION

Defendant-Intervenors in No. 88-5332

On Appeal From the United States District Court
for the District of New Jersey
(D.C. Civil Nos. 84-3255 and 84-3892)

Argued July 25, 1988

Before: HIGGINBOTHAM, BECKER and GREENBERG, *Circuit Judges*

(Filed February 28, 1989)

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OPINION OF THE COURT

BECKER, *Circuit Judge.*

This appeal presents the question whether the container labeling provisions of the New Jersey Worker and Community Right to Know Act, N.J. Stat. Ann. § 34:5A-14 (West 1988) ("Right to Know Act") are preempted by the Occupational Safety and Health Act of 1970, Pub. L. No. 91-596, 84 Stat. 1590 (1970) (codified at 29 U.S.C. §§ 651-678 (1982 & Supp. IV 1986) ("OSH Act") and the Hazard Communication Standard, 29 C.F.R. § 1910.1200 (1988), promulgated by the Occupational Safety and Health Administration ("OSHA") thereunder. Plaintiff-appellants New Jersey State Chamber of Commerce and Fragnance Materials Association, contending that the broad container labeling provisions of the Right to Know Act are preempted by the OSH Act and the federal standard, sought declaratory and injunctive relief in the district court. Named as defendants were various New Jersey officials charged with implementing the Right to Know Act.

In *New Jersey State Chamber of Commerce v. Hughey*, 774 F.2d 587 (3d Cir. 1985) ("*Hughey I*"), we held that a part of these container labeling provisions, i.e. that part relating to the labeling of workplace hazards in the manufacturing sector, was expressly preempted by the OSH Act. However, we also remanded the case to the district court to determine whether the container labeling provisions, to the extent that they were not expressly preempted, were nevertheless impliedly preempted because, due to the confusion allegedly engendered by the existence of multiple labeling systems, they "in fact stand as an obstacle to the accomplishment of the pur-

poses of the federal standard." 774 F.2d at 596. After a trial at which the parties presented evidence on this issue, the district court found that the New Jersey Act was not an obstacle to the accomplishment of the purposes of the federal standard and consequently held that the Act was not impliedly preempted by the OSH Act or OSHA's regulations. We stayed this judgment pending plaintiffs' appeal.

The Right to Know Act has separate provisions requiring the labeling of containers that contain hazardous chemicals (section 14(a)) and containers that contain any chemicals (section 14(b)). The latter provision is the so-called universal labeling provision. *See* N.J. Stat. Ann. § 34:5A-14. Plaintiffs present both express and implied preemption arguments. With respect to express preemption, plaintiffs argue, in the alternative, that (1) *Hughey I* held that the so-called universal container labeling provision of the New Jersey Act is expressly preempted by the federal standard; (2) *Hughey I* did not reach the question whether this provision of the New Jersey Act was expressly preempted and that we should so hold; or (3) *Hughey I* held that this provision was not expressly preempted but we should reexamine that holding because of subsequent amendments to the OSHA Hazard Communication Standard. The amendments to OSHA's regulations, however, were minimal, and plaintiffs' argument that this panel is free to reexamine *Hughey I*'s holding is frivolous. Moreover, we read *Hughey I* as holding that the universal labeling provision was not expressly preempted.

With respect to implied preemption, plaintiffs contend that the district court erred in its finding that the Right to Know Act would not stand as an obstable to the accomplishment of the purposes of the federal standard. However, we do not think the finding of the district court clearly erroneous. We therefore affirm.

I. THE ALLEGEDLY CONFLICTING STATUTES

A. The New Jersey Right to Know Act (Section 14)

Section 14 of the New Jersey Right to Know Act, N.J. Stat. Ann. §§ 35:5A-14, requires employers to label certain chemical containers.[1] Section 14(a) provides that

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[1] The relevant text of section 14 reads as follows:

> a. Every employer shall have until October 30, 1985 to take any action necessary to assure that every container at his facility containing a hazardous substance shall bear a label indicating the chemical name and Chemical Abstracts Service number of the hazardous substance or the trade secret registry number assigned to the hazardous substance. . . . Employers shall be required to label pipelines only at the valve or valves located at the point at which a hazardous substance enters a facility's pipeline system, and at normally operated valves, outlets, vents, drains and sample connections designed to allow the release of a hazardous substance from the pipeline.
>
> b. Wthin two years of the effective date of this act, every employer shall take any action necessary to assure that every container at his facility bears a label indicating the chemical name and Chemical Abstracts Service number of the substance in the container, except as provided in subsection d. of this section, or the trade secret registry number assigned to the substance. . . . If a container contains a mixture, an employer shall be required to insure that the label identify the chemical names and Chemical Abstracts Service numbers, except as provided in subsection d. of this section, or the trade secret registry numbers, of the five most predominant substances contained in the mixture. The provisions of this subsection shall not apply to any substance constituting less than 1% of a mixture unless the substance is present at the facility in an aggregate amount of 500 pounds or more. Employers shall be required to label pipelines only at the valve or valves located at the point at which a substance enters a facility's pipeline system, and at normally operated valves, outlets, vents, drains and sample connections designed to allow the release of a substance from the pipeline. . . . These standards shall be consistent with the intent of this subsection to provide for

"[e]very employer shall have until October 30, 1985" to label containers "containing a hazardous substance." A "hazardous substance" is defined as any substance on the New Jersey Department of Health's "workplace hazardous substance list," which consists of (1) "[a]ny substance . . . regulated by" OSHA under 29 C.F.R. part 1910, subpart z; (2) "[a]ny environmental hazardous substance"; and (3) "[a]ny other substance which the [D]epartment [of Health] . . . determines poses a threat to the health or safety of an employee." N.J. Stat. Ann. §§ 34:5A-3(m), 34:5A-5(a). An "environmental hazardous substance" is defined as any substance on the New Jersey Department of Environmental Protection's "environmental hazardous substance list," which consists of substances which, when "used, manufactured, stored, packaged, . . . disposed of or released into the environment of [New Jersey], . . . may be linked to the incidence of cancer; genetic mutations; physiological malfunctions . . . and other diseases; or which . . . may pose a threat to the public health and safety." N.J. Stat. Ann. §§ 34:5A-3(i), 34:5A-(3)(j), 34:5A-4(a).

Section 14(a) thus requires hazardous substance labeling with respect to both environmental hazardous substances and workplace hazardous substances that are not

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the labeling of every container which may contain a substance which is potentially hazardous.

c. . . . The Department of Health may, by rule and regulation, certify containers labeled pursuant to any . . . federal act as labeled in compliance with the provisions of this section.

d. One year after the effective date of this act the Department of Health shall adopt . . . a list of substance the containers of which may be labeled with the common names and Chemical Abstracts Service numbers of their contents. The department shall include on the list adopted pursuant to this subsection only substances which are widely recognized by their common names. An employer shall provide the chemical name of a substance in a container labeled pursuant to this subsection within five working days of the request therefor.

environmental hazardous substances. Section 14(a) requires the label to include the "chemical name and Chemical Abstracts Service number of the hazardous substance or the trade secret registry number assigned to the hazardous substance." [2]

Section 14(b) is considerably broader than section 14(a) with respect to the containers to which it applies. Section 14(b) requires that by August 29, 1986 (two years after the effective date of the Act), every employer shall label "every container at his facility" unless the container falls into one of a number of statutory exclusions. Exclusions aside, the universal labeling requirements of section 14(b) apply to all chemicals, whether hazardous or nonhazardous. If a container contains a mixture of chemicals, an employer must ensure that the label identifies the chemical names and Chemical Abstracts Service numbers or the trade secret registry numbers of the "five most predominant substances contained in the mixture," although the presence of a chemical need not be recorded on the label if it constitutes "less than 1% of a mixture unless the substance is present at the facility in an aggregate amount of 500 pounds or more." Section 14(b)'s label content requirements for each chemical are essentially identical to section 14(a)'s requirements; the only difference is that under section 14(b) employers may substitute the common name for

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[2] "Chemical name" is defined as "the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry or the Chemical Abstracts Service rules of nomenclature." N.J. Stat. Ann. § 34:5A-3(b). "Chemical Abstracts Service number" is defined as "the unique identification number assigned by the Chemical Abstracts Service to chemicals." N.J. Stat. Ann. § 34:5A-3(a). The "trade secret registry number" is "a code number . . . assigned to the identity of a substance in a container by the [New Jersey] Department of Health"; the chemical name and Chemical Abstracts Service number of a substance may be considered a trade secret "only if the employer can establish that the substance is unknown to competitors." N.J. Stat. Ann. §§ 34:5A-3(v), 34:5A-3(u).

the chemical name with respect to those substances that the Department of Health has determined "are widely recognized by their common names." N.J. Stat. Ann. § 34:5A-14(d).

B. The OSH Act and the OSHA Regulations

Section 6(b)(7) of the Occupational Safety and Health Act of 1970, 29 U.S.C. § 655(b)(7), and its implementing regulations, 29 C.F.R. § 1910.1200, require that employers provide information to their employees concerning hazardous chemicals. Chemical manufacturers are required to develop a material safety data sheet that contains detailed information about each hazardous chemical they produce. Employers using these hazardous chemicals receive the material safety data sheets from the manufacturers and must ensure that they are readily accessible to employees. 29 C.F.R. § 1910.1200(g). Employers must train their employees to detect the presence or release of a hazardous chemical in the work area, inform them of the physical and health hazards of work area chemicals, and train them in the measures necessary to protect themselves from these chemical hazards. *Id.* § 1910.1200(h).

Employers must also label containers of hazardous chemicals with the identity of the hazardous chemicals and appropriate hazard warning. *Id.* § 1910.1200(f). "Identity" is defined as "any chemical or common name" indicated on the material safety data sheet for the chemical. *Id.* § 1910.1200(c). "Hazardous chemical" is defined as any chemical that is a physical hazard or a health hazard. *Id.* Chemical manufacturers must evaluate the hazards of the chemicals they produce and must treat as hazardous chemicals regulated by 29 C.F.R., subpart z. *Id.* § 1910.1200(d). While the federal hazard communication standard originally applied only to the manufacturing sector, *see* Hazard Communication, 48 Fed. Reg. 53,280 (1983) (final rule), OSHA has subsequently amended the federal standard so that it covers the nonmanufacturing sector as well. *See* Hazard Communication, 52 Fed. Reg.

31,852 (1987) (final rule); *Associated Builders & Contractors, Inc. v. Brock*, 862 F.2d 63 (3d Cir. 1988) (upholding final rule).

C. *Schematic Differences with Respect to Container Labeling*

Although there are numerous similarities, the federal scheme differs from New Jersey's scheme with respect to container labeling in three relevant respects. New Jersey requires all chemical containers to be labeled; OSHA requires only containers containing hazardous chemicals to be labeled. New Jersey requires that the five most predominant substances contained in a mixture must be labeled; OSHA has no such requirement. New Jersey requires most labels to include the chemical name and Chemical Abstracts Service number; with respect to chemical identity, OSHA requires only the chemical or common name. OSHA defines chemical or common name in such a way that employers complying with the federal standard might not be in compliance with New Jersey's standard.[3]

II. EXPRESS PREEMPTION

A. *Effect of the Amendment of the Hazard Communication Standard*

Plaintiffs argue that we are not bound by *Hughey I* because OSHA subsequently amended the language of its preemption regulation in Hazard Communication, 52 Fed. Reg. at 31,860-61. *Compare* 29 C.F.R. § 1900.120[illegible](a)(2) (1988) ("Under section 18 of the Act, no state or political subdivision of a state may adopt . . . any requirement *relating* to the issue addressed by this Federal standard.

[3] New Jersey requires the Chemical Abstracts Service ("CAS") number to be included on every chemical container. N.J. Stat. Ann. §§ 34:5A-14(b); 34:5A-14(d). The federal standard contains no such requirement, although CAS numbers may be used to identify containers. *See* 29 C.F.R. § 1910.1200(c) (defining "chemical name" and "common name").

. . .") (emphasis added) *with* 29 C.F.R. § 1900.1200(a)(2) (1984) ("This occupational safety and health standard is intended . . . to preempt any state law *pertaining* to this subject." (emphasis added). The first flaw in appellant's argument is that the language "relating to" does not sweep much more broadly, if at all, than "pertaining to." Second, OSHA's release cites *Hughey I* without criticizing it and states that the purpose of the new language is to ensure that "local laws" as well as state laws "*pertaining* to occupational hazard communication are preempted by the Federal standard." 52 Fed. Reg. at 31,860 (emphasis added). Thus the release not only uses the language of the old standard but also states that the purpose of the change was not to substitute "relating to" for "pertaining to" but to ensure that the express preemption provision of the regulation reached local as well as state laws. Third, *Hughey I* does not rely upon the "pertaining to" language of the old regulation but instead interprets the "relating to" language of section 18(b) of the OSH Act, *Hughey I*, 774 F.2d at 592. We therefore conclude that OSHA's subsequent amendments to the federal standards have no effect on our obligation to follow *Hughey I*.

B. Does Hughey I *Foreclose De Novo Assessment of the Express Preemption Issue?*

Section 18(b) of the OSH Act, 29 U.S.C. § 667(b), expressly preempts state occupational safety and health standards "relating to any occupational safety or health issue with respect to which a [f]ederal standard has been promulgated" under 29 U.S.C. § 655. The only state standards excluded from the reach of this express preemption provision are those which, unlike the New Jersey Right to Know Act, have been approved by the Secretary of Labor. 29 U.S.C. § 667(c).

The parties dispute the extent to which the New Jersey Act "relat[es]" to the occupational safety or health issues

regulated by OSHA's federal standard. Defendants concede the obvious areas of overlap between the state and federal requirements regarding container labeling. They argue, however, that the New Jersey statute has a purpose and scope that is broader than worker protection, since the labeling also furnishes information to firefighters, police officers, and members of the community at large who may be endangered by the chemicals.

The threshold issue is the extent to which *Hughey I* forecloses an independent asessment of these express preemption questions. *Hughey I* construed section 18(a) as expressly preempting a state law only "insofar as the [law] pertains to protection of employee health and safety," and "only to the extent that a federal standard regulating the same issue is already in effect." 774 F.2d at 593. *Hughey I* examined each section of the New Jersey Act to determine the extent to which the section pertains to employee health and safety and the extent to which the section instead "regulate[s] other concerns." *Id.* Where the court found that a section pertains to employee health and safety in some respect, the court held that section 18(a) of the OSH Act preempted the section to that extent. The overarching principle is therefore that a provision of the New Jersey Act is preempted only to the extent that the provision has as its "primary purpose . . . the promotion of occupational health and safety. . . ." 774 F.2d at 595. *See also Manufacturers Association of Tri-County v. Knepper*, 801 F.2d 130, 138 (3d Cir. 1986) (applying *Hughey I*'s methodology to the Pennsylvania Worker and Community Right-to-Know Act), *cert. denied*, 108 S. Ct. 66 (1987).[4]

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[4] Regarding the problem of the severability of the preempted provisions of the New Jersey Act, *Hughey I* held that "[t]he intention of the New Jersey legislature will be best advanced by severing preempted portions of the Right to Know Act and leaving the remainder operative." *Id.* at 598.

Hughey I dealt with the New Jersey Act's container labeling provision as follows (numbering added):

> [1] The labeling requirements of the federal Hazard Communication Standard expressly preempt section 34:5A-14 to the extent that they require labeling of workplace hazards in the manufacturing sector. [2] Section 34:5A-14 continues to operate, however, outside . . . [the manufacturing sector].
>
> [3] The Hazard Communication Standard does not expressly preempt section 34:5A-14 to the extent that it requires that containers of environmental hazardous substances be labeled. [4] Plaintiffs contend that the labeling provisions of the New Jersey Act are impliedly preempted because they are an obstacle to the accomplishment of congressional purpose in the OSH Act. [5] Section 34:5A-14 requires that within two years containers and pipelines be labeled with chemical names and Chemical Abstracts Service Registry numbers of the five predominant substances passing through them. [6] The plaintiffs contend that compliance with these labeling requirements, which are intended to furnish information to firefighters, police officers, and members of the community at large, will, if imposed on employers in the manufacturing sector, stand as an obstacle to the accomplishment of the purposes of the federal Hazard Communication Standard. . . . [7] The district court, because it determined that the preempted provisions of the Act were unseverable, did not decide whether the plaintiffs were entitled to a summary judgment that the environmental hazard labelling features of the Right to Know Act were impliedly preempted by the federal . . .[s]tandard. [8] Our examination of the summary judgment record suggests that there are disputed issues of material fact which preclude a summary judgment for the plaintiffs or the defendants on that issue.

Id. at 595-96.[5] The quoted passage is somewhat opaque upon first reading, as it does not expressly distinguish between section 14(a), regarding labeling of containers containing a hazardous substance, and section 14(b), the universal labeling provision. The passage does, however, evince a clear holding.

The best place to start is the fifth sentence. The Court there states that "Section 34:5A-14 requires that within two years containers and pipelines be labeled with chemical names and Chemical Abstracts Service Registry numbers of the five predominant substances passing through them." This sentence must refer to section 14(b), as the sentence does not limit the labeling requirement to hazardous substances, and only section 14(b) contains the five-predominant-substances requirement. The sixth sentence of the passage states that "[t]he plaintiffs contend that compliance with these labeling requirements, which are intended to furnish information to firefighters, police officers, and members of the community at large, will, if imposed on employers . . . stand as an obstacle to . . . the federal . . . [s]tandard." In light of our understanding of sentence five, we must conclude that reference to "these labeling requirements" refers to the labeling requirements of section 14(b), the universal labeling requirement.

To recapitulate: given this analysis, the Court in the sixth sentence must be deemed to have held that the requirements of section 14(b) "are intended to furnish information to firefighters, police officers, and members of the community at large." Under *Hughey I*'s "primary

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[5] *Hughey I* limited the secope of its express preemption holdings to the New Jersey Act's application to the manufacturing sector, as OSHA had not yet extended the federal hazard communication standard to the nonmanufacturing sector. With respect to the nonmanufacturing sector, the New Jersey Act did not regulate an "issue[] that . . . [was] federally regulated." *Hughey I*, 774 F.2d at 593.

purpose" methodology, section 14(b) is thus addressed to a concern other than occupational health and safety and is therefore not expressly preempted by section 18(a) of the OSH Act. Rather, *Hughey I* holds that section 14(b) is preempted, in the words of the sixth sentence, only if it "stand[s] as an obstacle to the accomplishment of the purposes of the federal . . . [s]tandard." The Court remanded this implied preemption question to the district court.

We do not deny the force of plaintiffs' contention that another reasonable reading of section 14(b) could conclude that it was intended to furnish information both to workers and nonworkers, especially since the second and third sentences of section 14(b) ensure "employee" access to certain information. If *Hughey I* had expressly acknowledged the dual purpose of section 14(b), it would then have had to determine whether a provision with such a dual purpose "relat[ed] to any occupational safety or health issue with respect to which a [f]ederal standard has been promulgated," OSH Act section 18(b), 29 U.S.C. § 667(b), and set forth an explicit rationale as to why. While appellants may take such arguments to a higher court, we are not free to consider them, as *Hughey I* is a binding precedent of this court which a subsequent panel may not overrule. U.S. Court of Appeals for the Third Circuit Int. Op. P. 8(c).

In construing *Hughey I*, plaintiffs place great weight on the first sentence of the quoted passage, which states that "[t]he labeling requirements of the federal Hazard Communication Standard expressly preempt section 34: 5A-14 to the extent that they require labeling of workplace hazards in the manufacturing sector." We do not read this sentence as speaking, however, to whether section 14(b), the universal labeling provision, is preempted. Since the universal labeling provision is "intended to furnish information to firefighters, police officers, and members of the community at large," the *Hughey I* court

could not have meant to exempt containers containing workplace hazards from the universal labeling requirement. If the New Jersey legislature has deemed it necessary that firefighters be informed of whether a container contains a harmless substance such as water, the firefighter must also need to know whether a container contains a chemical sufficiently hazardous that it is considered a workplace hazard.

Hughey I did hold that part of section 14(a) was expressly preempted. The first sentence (section 14 expressly preempted "to the extent that [i]t[] require[s] labeling of workplace hazards") and the third sentence (section 14 not expressly preempted "to the extent that it requires that containers of environmental hazardous substances be labeled") refer to labeling requirements concerning hazardous substances and hence pertain to section 14(a). Read together, these sentences state that section 14(a) is expressly preempted to the extent that it requires the labeling of workplace hazards that are not also environmental hazards. This holding comports with *Hughey I*'s methodology, as it would be difficult to argue that a labeling requirement concerning workplace hazards that were not also environmental hazards related to anything other than the concerns addressed by the federal standard.

Hughey I thus held that section 18(a) of the OSH Act expressly preempted section 14 of the New Jersey Act only to the extent that section 14(a) required the labeling of workplace hazards that were not also environmental hazards.[6] We turn to plaintiffs' argument that

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[6] *Hughey I* limited the reach of its express preemption holding to the New Jersey Act's application to the manufacturing sector, as OSHA had not yet extended the federal standard to the nonmanufacturing sector. Since the federal standard has now been extended to the nonmanufacturing sector, one might argue that *Hughey I*'s express preemption holding should also be extended to the nonmanufacturing sector. Plaintiffs, however, did not raise this issue in the district court, so we do not reach the issue whether

the overlapping state and federal regulation of workplace hazards will interfere with OSHA's regulatory scheme, a matter of implied rather than express preemption.

III. IMPLIED PREEMPTION

A. The District Court's Findings of Fact

The container labeling provisions of the New Jersey Act are impliedly preempted by the federal standard if they "in fact stand as an obstacle to the accomplishment of the purposes of the federal standard." *Hughey I*, 774 F.2d at 596. After evaluating the expert testimony presented by both plaintiffs and defendants, the district court held "the OSH Act and OSHA's Hazard Communication Standard do[ ] not impliedly preempt the N.J. Act's environmental and universal labeling requirements." Dist. Ct. Op. at 31 (Feb. 5, 1988). This legal conclusion concludes a careful and thorough opinion that succinctly summarizes the testimony of each of the expert witnesses.

In the factual findings section of its opinion, the district court evaluates the credibility of the expert testimony and concludes that "all of the witnesses were truthful and I accept as true all the facts to which they testified. Needless to say the opinions of the parties' witnesses about the ultimate factual conclusions to be drawn were in conflict and I must determine which were the more persuasive." Dist. Ct. Op. at 28. The district court then restates plaintiffs' argument that the New Jersey labeling requirement stands as an obstacle to the accomplishment of the purposes of the OSHA standard:

> Plaintiffs' basic thesis . . . is that serious worker confusion will result from the dual labeling system. The confusion will arise, plaintiffs contend, from

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nonmanufacturers need comply with section 14(a) to the extent that it requires the labeling of workplace hazards that are not also environmental hazards.

such things as: (i) the very existence of two labeling systems and the inability of workers to determine which one pertains to worker hazards; (ii) the multiplicity of labels, tending to overwhelm the OSHA hazard labels; (iii) the labeling of hazardous components of mixtures on containers which do not require an OSHA hazard label; (iv) the labeling of a non-hazardous component of a mixture which is in fact hazardous and must carry an OSHA hazard label; and (v) the existence of different numbering systems which will make it difficult for a worker to find the appropriate [OSHA material safety data sheets].

Dist. Ct. Op. at 29. The district court then sets forth its factual conclusion:

> While unquestionably it would be possible to cause worker confusion through inappropriate label formatting and positioning and through inadequate worker training, I conclude that this is most unlikely to occur and that the OSHA labeling requirements can co-exist with the Section 14(a) and (b) labeling requirements of the N.J. Act without serious risk of one system obstructing or interfering with the other.

Id.

With respect to worker training, the district court reasoned that (1) "OSHA . . . cannot have contemplated that the OSHA hazard label would be the only label on . . . containers[, because] the testimony established conclusively that without regard to New Jersey's labeling requirements, . . . containers typically contain a multitude of labels which include such things as the chemical names, C[hemical] A[bstract] [Service] numbers, the manufacturer's product or inventory number, safety instructions, instructions about disposing of containers"; (2) "OSHA training would require that workers be instructed how to identify the OSHA hazard label amidst all the other

labels"; and therefore (3) "[t]he addition of the material required by the N.J. Act would not change the situation materially." *Id.* at 30. With respect to formatting and positioning, the district court reasoned that (1) "[t]he OSHA label can be distinguished from all other labels by proper formatting and positioning"; (2) "it is in the manufacturer's interests to alert his workers to potential hazards"; (3) "proper formatting and positioning . . . are within the contemplation of the OSHA system"; and therefore (4) "there is no reason to believe that proper and effective formatting and positioning will not be the rule." *Id.* The district court thus concluded that "[f]ormatting and positioning and training, all of which are within the contemplation of the OSHA system, will ensure that implementation of New Jersey's environmental and universal labeling requirements will not stand as an obstacle to the accomplishment of the purposes of the federal standard." Dist. Ct. Op. at 30-31.

B. Scope of Review

We may not set aside the district court's factual finding that the New Jersey Act would not stand as an obstacle to the accomplishment of the purposes of the federal standard unless that finding is clearly erroneous. Fed. R. Civ. P. 52(a); *see Hillsborough County v. Automated Medical Laboratories, Inc.*, 471 U.S. 707, 720-21 (1985) (applying Rule 52(a) in the preemption context). With respect to the district court's legal conclusion that the OSHA standard does not preempt the New Jersey Act, we exercise plenary review. *See Shultz v. Wheaton Glass Co.*, 421 F.2d 259, 267 (3d Cir. 1970).

The Supreme Court has summarized the clearly erroneous standard of Rule 52(a) as follows:

> If the district court's account of the evidence is plausible in light of the record viewed in its entirety, the court of appeals may not reverse it even though

> convinced that had it been sitting as the trier of fact, it would have weighed the evidence differently. Where there are two permissble views of the evidence, the factfinder's choice between them cannot be clearly erroneous. This is so even when the district court's findings do not rest on credibility determinations. . . .

Anderson v. City of Besesemer City, 470 U.S. 564, 573-74 (1985) (citations and paragraphing omitted).

C. Discussion

The district court heard conflicting expert testimony as to whether the New Jersey Act would stand as an obstacle to the accomplishment of the purposes of the federal standard. The plaintiffs presented a number of highly qualified experts who opined that workers would either be confused by the additional information by the New Jersey Act or would be overwhelmed with so much information that they would ignore the OSHA labels. The defendants presented a number of highly qualified experts who testified that workers would neither be confused nor overwhelmed by the addition of the New Jersey labels and that proper worker training and label formatting would take care of any such problems. The district court found that the arguments presented by the defendants' experts were more convincing. We do not think that the district court's finding was clearly erroneous.

The Chamber of Commerce argues that "[t]he fact that confusion can be prevented or eliminated by a modification of the OSHA labeling format and training program presents an impermissible intrusion into the federally mandated program." Brief at 39. We disagree. This argument rests upon an assumption that the federal standard contemplates a fixed rather than flexible level of training and labeling format and that any de-

velopment which necessitates a change from that fixed level or format therefore constitutes an "intrusion." This assumption is unfounded, as the training and formatting requirements of the federal standard are phrased in flexible terms so as to remain effective despite the multiplicity of circumstances that naturally arise in our nation's factories, refineries, construction sites, offices, and other workplaces.[7]

The federal standard requires that "[e]mployers . . . ensure that employees are provided with information and training . . . to the extent necessary to protect them in the event of a spill or leak of a hazardous chemical from a sealed container." 29 C.F.R. § 1910.1200(b)(4)(iii). The standard's training requirements are undeniably general, *see* 29 C.F.R. § 1910.1200(h)(2) (requiring employee training in observation, hazards, and employer's protection program), as are the labeling requirements, which may reasonably be construed to require that the hazard information be presented in such a way as to prevent unnecessary worker confusion between the OSHA label and the many other labels that the district court found were present on chemical containers.[8] According to

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[7] Indeed, plaintiff's argument leads to a *reductio ad absurdum*. If one were to categorize the OSHA training requirements as fixed rather than flexible, New Jersey would "intrude" upon the OSHA training were it to repeal the Right to Know Act after it went into effect, as the OSHA training that workers receive would naturally be altered because there would no longer be a need to train workers to focus on the OSHA rather than New Jersey labels (although there would still be a need to train workers to distinguish between the OSHA labels and the many other labels that the district court found were present on chemical containers).

[8] *See* 29 C.F.R. § 1910.1200(f)(9) (requiring that employers "ensure that labels or other forms of warning are legible, in English, and prominently displayed on the container"); 29 C.F.R. § 1910.1200(f)(5)(ii) (requiring that employers "ensure that each

the defendants' expert testimony, adopted as a finding by the district court, workers given proper training would not be confused by the New Jersey labels if employers took such easy-to-implement steps as boxing off the New Jersey information or providing headings to inform the reader whether the information under the headings was required by the federal standard or New Jersey law. This finding is certainly supported by the record.

Plaintiff Frangrance Materials also tries to escape from clearly erroneous review by arguing that "[w]hen a state seeks to require something that a federal agency has decided should not be required, and thereby alters the balance struck by the federal agency, the state law 'conflicts' with the federal as a matter of law." Brief at 30. Although not labeled as such, this argument is a species of the "occupied the field" preemption argument and is foreclosed by our previous opinion in *Hughey I*. If any state law that mandated additional labeling beyond that required by the federal standard were preempted as a matter of law, there would have been no need for *Hughey I* to remand this case to the district court.

We therefore hold that the district court's finding that the Right to Know Act does not stand as an obstacle to the accomplishment of the purposes of the federal standard is not clearly erroneous, and that the district court correctly concluded that section 14 of the Right to Know Act is not impliedly preempted.

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container of hazardous chemicals in the workplace is labeled . . . with . . . appropriate hazard warnings"); 29 C.F.R. § 1910.1200(c) (defining "hazard warning" as "any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the hazard(s) of the chemical(s) in the container(s)").

IV. CONCLUSION

The judgment of the district court will be affirmed. This Court's stay of the district court's judgment pending appeal will be vacated.

A True Copy:

Teste:

Clerk of the United States Court of Appeals
for the Third Circuit

APPENDIX B

UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY

Civil Action No. 84-3255

NEW JERSEY STATE CHAMBER OF COMMERCE; CHEMICAL INDUSTRY COUNCIL OF NEW JERSEY; NEW JERSEY BUSINESS AND INDUSTRY ASOCIATION; CHEMICAL SPECIALTIES MANUFACTURERS ASSOCIATION, INC.; MERCK & CO., INC.; MAGNESIUM ELEKTRON, INC.; CP CHEMICALS, INC.; CHEM-MARK, INC.; EXXON CHEMICAL AMERICAS, a division of Exxon Chemical Company, a division of Exxon Corporation; SCHERING CORPORATION; ESSEX CHEMICAL CORPORATION; INGERSOLL-RAND COMPANY; and SHELL CHEMICAL COMPANY, a division of Shell Oil Company, *Plaintiffs*,

v.

ROBERT E. HUGHEY, Commissioner of Environmental Protection; J. RICHARD GOLDSTEIN, M.D., Commissioner of Health, and WILLIAM VAN NOTE, Acting Commissioner of Labor, and the STATE OF NEW JERSEY,
Defendants,

and

JOSEPH H. RODRIGUEZ, Public Advocate of the State of New Jersey; NEW JERSEY STATE INDUSTRIAL UNION COUNCIL, AFL-CIO (IUC); CITIZEN ACTION OF NEW JERSEY; PHILADELPHIA AREA PROJECT ON OCCUPATIONAL SAFETY & HEALTH (PHILAPOSH); NEW JERSEY ENVIRONMENTAL LOBBY; NEW JERSEY STATE FIREMEN'S MUTUAL BENEVOLENT ASSOCIATION (FMBA);

INTERNATIONAL ASSOCIATION OF FIREFIGHTERS OF NEW JERSEY AFL-CIO (IAFF); COMMUNICATION WORKERS OF AMERICA, AFL-CIO (CWA); DISTRICT THREE, INTERNATIONAL UNION OF ELECTRONIC, ELECTRICAL, TECHNICAL, SALARIED AND MACHINE WORKERS, AFL-CIO (IUE); INTERNATIONAL LADIES' GARMENT WORKERS' UNION, AFL-CIO (ILGWU); AMALGAMATED CLOTHING AND TEXTILE WORKERS UNION, AFL-CIO, CENTRAL AND SOUTH JERSEY JOINT BOARD (ACTWU); UNITED PAPERWORKERS INTERNATIONAL UNION, AFL-CIO (UPIU); OIL, CHEMICAL AND ATOMIC WORKERS UNION, AFL-CIO, LOCALS 8-149, 8-760 and 8-5570 (OCAW); UNITED AUTO WORKERS UNION, AFL-CIO, LOCAL 502 (UAW); CHEMICAL WORKERS ASSOCIATION, INC.; INDEPENDENT OIL WORKERS UNION; TRENTON EDUCATION ASSOCIATION; ALUMINUM, BRICK & GLASS WORKERS INTERNATIONAL UNION, AFL-CIO, LOCAL 514-G; PENNSYLVANIA FEDERATION, BROTHERHOOD OF MAINTENANCE OF WAY EMPLOYEES, AFL-CIO; COALITION AGAINST TOXICS; LEAGUE OF CONSERVATION VOTERS (NEW JERSEY); CLEAN WATER ACTION (WASHINGTON, D.C. AND NEW JERSEY); STUDENT PUBLIC INTEREST RESEARCH GROUP OF NEW JERSEY (N.J. PIRG); ENVIRONMENTAL ACTION (WASHINGTON, D.C.); LEAGUE OF WOMEN VOTERS OF NEW JERSEY; SIERRA CLUB (NEW JERSEY); AMERICAN LUNG ASSOCIATION OF NEW JERSEY; NEW JERSEY TENANTS ORGANIZATION (NJTO); NEW JERSEY ASSOCIATION OF COUNTY HEALTH OFFICERS; and NEW JERSEY HEALTH OFFICERS ASSOCIATION,

Defendant-Intervenors.

Civil Action No. 84-3892

FRAGRANCE MATERIALS ASSOCIATION OF THE UNITED STATES; FLAVOR AND EXTRACT MANUFACTURE'S ASSOCIATION; BUSH BOAKE ALLEN, INC.; DRAGOCO, INC.; FIREMENICH, INC.; INTERNATIONAL FLAVORS AND FRAGRANCES, INC.; ISOGENICS, INC.; H.J. KOHNSTAMM & CO., INC.; V. MANE FILS, INC.; NOVILLE ESSENTIAL OIL COMPANY, INC.; POLAROME MANUFACTURING CORP.; ROURE BERTRAND DUPONT, INC.; TAKASAGO USA, INC.; UNGERER & CO.; and UNIVERSAL FRAGRANCE CORPORATION, *Plaintiffs*,

v.

WILLIAM VAN NOTE, Acting Commissioner of Labor for State of New Jersey; J. RICHARD GOLDSTEIN, Commissioner of Health for State of New Jersey; ROBERT E. HUGHEY, Commissioner of Environmental Protection for State of New Jersey,

Defendants,

and

JOSEPH H. RODRIGUEZ, Public Advocate of the State of New Jersey; NEW JERSEY STATE INDUSTRIAL UNION COUNCIL, AFL-CIO (IUC); CITIZEN ACTION OF NEW JERSEY; PHILADELPHIA AREA PROJECT ON OCCUPATIONAL SAFETY & HEALTH (PHILAPOSH); NEW JERSEY ENVIRONMENTAL LOBBY; NEW JERSEY STATE FIREMEN'S MUTUAL BENEVOLENT ASSOCIATION (FMBA); INTERNATIONAL ASSOCIATION OF FIREFIGHTERS, NEW JERSEY AFL-CIO (IAFF); COMMUNICATION WORKERS OF AMERICA, AFL-CIO (CWA); DISTRICT THREE, INTERNATIONAL UNION OF ELECTRONIC, ELECTRICAL, TECHNICAL, SALARIED AND MACHINE WORKERS, AFL-CIO (IUE); INTERNATIONAL LADIES' GARMENT WORK-

ERS' UNION, AFL-CIO (ILGU); AMALGAMATED CLOTHING AND TEXTILE WORKERS UNION, AFL-CIO, CENTRAL AND SOUTH JERSEY JOINT BOARD (ACTWU); UNITED PAPERWORKERS INTERNATIONAL UNION, AFL-CIO (UPIU); OIL, CHEMICAL AND ATOMIC WORKERS UNION, AFL-CIO, LOCALS 8-149, 8-760, and 8-5570 (OCAW); UNITED AUTO WORKERS UNION, AFL-CIO, LOCAL 502 (UAW); CHEMICAL WORKERS ASSOCIATION, INC.; INDEPENDENT OIL WORKERS UNION; TRENTON EDUCATION ASSOCIATION; ALUMINUM, BRICK & GLASS WORKERS INTERNATIONAL UNION, AFL-CIO, LOCAL 514-G PENNSYLVANIA FEDERATION, BROTHERHOOD OF MAINTENANCE OF WAY EMPLOYEES, AFL-CIO; COALITION AGAINST TOXICS; LEAGUE OF CONSERVATION VOTERS (NEW JERSEY); CLEAN WATER ACTION (WASHINGTON, D.C. and NEW JERSEY); STUDENT PUBLIC INTEREST RESEARCH GROUP OF NEW JERSEY (N.J. PIRG); ENVIRONMENTAL ACTION (WASHINGTON, D.C.) LEAGUE OF WOMEN VOTERS OF NEW JERSEY; SIERRA CLUB (NEW JERSEY); AMERICAN LUNG ASSOCIATION OF NEW JERSEY; NEW JERSEY TENANTS ORGANIZATION (NJTO); NEW JERSEY ASSOCIATION OF COUNTY HEALTH OFFICERS; and NEW JERSEY HEALTH OFFICERS ASSOCIATION,

Defendant-Intervenors.

Opinion

[Filed Jan. 3, 1985]

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DEBEVOISE, District Judge.

I. *The Proceedings*

These two consolidated actions challenge the New Jersey Worker and Community Right to Know Act (the "Right to Know Act"), N.J.S.A. 34:5A-1, et seq., primarily on the ground that the Act is preempted by regulations or standards promulgated under the federal Occupational Safety and Health Act of 1970 (the "OSH Act"),[1] 29 U.S.C. §§ 651, et seq. Plaintiffs further con-

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[1] I have tried to minimize the use of initials and acronyms. To assist the reader of this opinion, the following will be used from time to time:

CAS Numbers —Chemical Abstract Service registry numbers.
DEP —New Jersey's Department of Environmental Protection.
EPA —The federal Environmental Protection Agency.
FIFRA —Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. §§ 136, et seq.
MSDS —Material Safety Data Sheets required under the New Jersey Right to Know Act.
OSHA —Federal Occupational Safety and Health Administration.
OSH Act —Occupational Safety and Health Act of 1970.
SIC —Standard Industrial Classification.

tend that certain of the Right to Know Act's disclosure requirements constitute an unreasonable exercise of the State's police power and will result in a taking of trade secrets without due process of law.

The plaintiffs in Civil Action No. 84-3255 (the "Chamber of Commerce Action") are the New Jersey State Chamber of Commerce, three chemical and business associations, and eight pharmaceutical and chemical companies. Defendants in that action are New Jersey's Commissioner of Environmental Protection, Commissioner of Health, Acting Commissioner of Labor, and the State of New Jersey. Plaintiffs ask for injunctive and declaratory relief. They seek an order directing the defendant Commissioners to comply with the provisions of § 18 of the OSH Act (defining federal preemption), 29 U.S.C. § 667, and enjoining the State of New Jersey from enforcing the obligations of the Right to Know Act. Plaintiffs seek a declaratory judgment that § 18 of the OSH Act precludes the New Jersey Commissioners from enforcing the obligations of the Right to Know Act in light of OSHA's Hazard Communication Standard, 29 C.F.R. § 1910.1200, and that the Right to Know Act is, on its face, unconstitutional and preempted by § 18 of the OSH Act and the Hazard Communication Standard.

After defendants in the Chamber of Commerce Action answered, plaintiffs moved for a preliminary injunction against enforcement of the Right to Know Act. A hearing was held on November 15, 1984.

The plaintiffs in Civil Action No. 84-3892 (the "Fragrance Materials Association Action") are two associations, the members of which are engaged in the manufacture and sale of fragrances and fragrance materials, and thirteen corporations which compound, mix, blend and/or manufacture fragrances or their ingredients. The defendants are the three New Jersey Commissioners who are the defendants in the Chamber of Commerce Action.

Plaintiffs in the Fragrance Materials Association Action seek to enjoin enforcement of the Right to Know Act. After defendants answered plaintiffs moved for summary judgment on Count I (alleging preemption) and on Count II (alleging deprivation of trade secrets without just compensation) or, in the alternative, for a preliminary injunction against enforcement of the Right to Know Act. Plaintiffs' motion was heard on December 10, 1984.

The two cases were consolidated prior to the November 15 and December 10 hearings. The Public Advocate of the State of New Jersey and twenty-nine unions, environmental organizations and other interested groups had moved to intervene. I granted the motion. The intervenors cross-moved for a partial summary judgment in their favor dismissing Counts I and II of the complaint in the Fragrance Materials Association Action. The intervenors as well as the original parties participated in the two hearings.

This opinion addresses all of the pending motions.

II. *The Facts*

A. *The Right to Know Act*: On August 29, 1983 New Jersey's Governor signed the Worker and Community Right to Know Act, N.J.S.A. 34:5A-1, et seq., which became effective August 29, 1984.

Defendants submitted affidavits of numerous persons having experience and expertise in the fields of chemical substances and occupational and community hazards resulting from such substances. Included among the affidavits were governmental officials having responsibilities for workplace or community protection from chemical hazards, physicians and scientists whose careers have been devoted to treating or preventing illnesses caused by dangerous substances and persons familiar with the problems of fire fighting at industrial sites.

Taken together their affidavits demonstrate the rationale for the Right to Know Act. New Jersey, one of the nation's smallest states, is also one of the most densely populated. It has a high concentration of industry in general and of chemical manufacturers and processors in particular. Since World War II the number of available chemicals has grown extraordinarily, there now being approximately 50,000 different chemicals used in industry. Many of these are hazardous. Exposure to these hazardous substances can take place in the plant where they are used or processed; the community can be exposed through emission in the air, through accidental leakage from the plant or through lawful and unlawful disposal outside the plant. Exposure can and does result in debilitating or fatal illness, particularly cancer, lung ailments, sterility and birth defects.

Workers in a plant are often unaware of the dangerous substances with which they deal, or, if they are aware, they may not be advised of the precautions they should take. Often employers are unaware of the dangerous nature of the materials in their plants. The affidavits recite instances in which doctors seeking to treat an employee after exposure to a chemical substance have been unable to do so because the employer is either unable or unwilling to identify the substance.

Further, inhabitants of communities surrounding industrial complexes do not know the nature of chemical vapor to which they are exposed nor do they know the possible hazards which exposure entails. Public health officials cannot advise them because they, too, quite often do not have the necessary information. While some industrial concerns go to great pains to educate and inform both their employees and public officials of the chemical substances in their plants, others do not. Lacking such cooperation there was little that public officials could do to protect citizens from the existence of harmful substances.

In particular fire fighting organizations were often unable to obtain precise information concerning the substances with which they might have to deal in the event of a plant fire. Further, when fires occurred, there was often no way in which firemen could tell quickly what substances were burning in the plants. This information might be vital both to know how to deal with the fire itself and to safeguard firemen and other persons in the area.

New Jersey enacted the Right to Know Act to meet this congeries of problems arising in the workplace and extending into the community at large. The purpose is reflected in the Act's legislative findings and declarations, N.J.S.A. 34:5A-2, and in the statement of purpose contained in the regulations implementing the Act. N.J.A.C. 8:59-1.2.

The Right to Know Act requires that the New Jersey Department of Environmental Protection the "DEP") develop both an environmental hazardous substance list and an environmental survey designed to enable employers to report information about environmental hazardous substances at their facilities. N.J.S.A. 34:5A-4.

The Department of Health is required to develop four things: (1) a workplace hazardous substance list which must include (a) any substance regulated by the federal Occupational Safety and Health Administration ("OSHA") under 29 C.F.R., Part 1910, subpart z, (b) any environmental hazardous substance and (c) any other substance which the Department determines poses a threat to the health or safety of an employee; (2) "a special health hazard substance list comprising hazardous substances which, because of their known carcinogenicity, mutagenicity, teratogenicity, flammability, explosiveness, corrosivity, or reactivity pose a special hazard to health and safety, and for which an employer shall not be permitted to make a trade secret claim;" (3) a workplace survey designed to facilitate the reporting by employers

of hazardous substances at their facilities; and (4) a hazardous substance fact sheet for each hazardous substance on the workplace hazardous substance list. N.J.S.A. 34:5A-5.

The Act required that within 5 days of August 29, 1984 (the effective date of the Act), the environmental survey and the workplace survey be distributed to each employer subject to the Act. N.J.S.A. 34:5A-6. Within 90 days of receipt of the workplace survey the employer is required to complete it and send copies to the Department of Health, the county health department, the local fire department and the local police department. Within the same time the employer is required to complete the environmental survey and send a copy to the DEP and to the county health department and to send "pertinent sections of the survey" to the local police and fire departments. N.J.S.A. 34:5A-7.

Upon recepit of a completed workplace survey from the employer, the Department of Health must transmit to the employer a fact sheet (prepared by the Department, as noted above) for each hazardous substance reported by the employer on the workplace survey. N.J.S.A. 34:5A-8. The Department must maintain a file of completed workplace surveys, require that every employer update its survey annually and make available copies of the surveys and related hazardous substance fact sheets upon request. N.J.S.A. 34:5A-10. The DEP must maintain a file of completed environmental surveys, require that every employer update its survey each year, and make copies of the surveys available upon request. N.J.S.A. 34:5A-9.

Each employer must maintain at its facility a central file in which it shall retain the workplace survey, appropriate hazardous substance fact sheets and, if appropriate, the facility's environmental survey. Notice of availability must be posted and employee access must be provided. N.J.S.A. 34:5A-12. In addition the Right to

Know Act contains detailed provisions mandating an education and training program for employees, "which shall be designed to inform employees in writing and orally of the nature of the hazardous substances to which they are exposed in the course of the employment and the potential health risks which the hazardous substances pose." The employer must also train his employees "in the proper and safe procedures for handling the hazardous substances under all circumstances. N.J.S.A. 34:5A-13.

The Act also contains detailed provisions for labeling containers containing hazardous substances and pipelines. "Within six months of the effective date of this act, every employer shall take any action necessary to assure that every container at his facility containing a hazardous substance shall bear a label indicating the chemical name and Chemical Abstracts Service number of the hazardous substance or the trade secret registry number assigned to the hazardous substance." Further, "[e]mployers shall be required to label pipelines only at the valve or valves located at the point at which a hazardous substance enters a facility's pipeline system, and at normally operated valves, outlets, vents, drains and sample connections designed to allow the release of a hazardous substance from the pipeline." N.J.S.A. 34:5A-14.

The Act goes on to provide that "[w]ithin two years of the effective date of this act, every employer shall take any action necessary to assure that every container at his facility [whether or not it contains a hazardous substance] bears a label indicating the chemical name and Chemical Abstracts Service number of the substance in the container . . . or the trade secret registry number assigned to the substance." If a container contains a mixture of substances, the employer's label must similarly identify the five most predominant substances contained in the mixture. The labeling provisions effective after two years will not apply to any substance constituting less than 1% of a mixture unless the substance is present at

the facility in an aggregate amount of 500 pounds or more. Provisions concerning the labeling of pipelines parallel those applying to the period beginning six months after the effective date of the Act. N.J.S.A. 34:5A-14.

The Right to Know Law deals with the problem that disclosure of chemical substances in the workplace and the labeling of containers may result in the disclosure of trade secrets of an employer. Procedures are established whereby an employer may claim that specified information disclosed in an environmental survey or in a workplace survey or through the labeling process constitutes a trade secret. If the DEP or the Department of Health disputes the trade secret claim an administrative hearing and subsequent court review are available. Until the dispute is resolved and after a trade secret claim is either accepted by the agency or favorably adjudicated, confidentiality must be preserved except that disclosure may be made to a physician when such information is needed for medical diagnosis or treatment. N.J.S.A. 34:5A-15.

Trade secret protection is not accorded, however, to substances on the special health hazard substance list, "for which an employer shall not be permitted to make a trade secret claim" N.J.S.A. 34:5A-5b. The Department of Health has prepared a workplace hazardous substance list consisting of 2051 items. Of these 835 are on the special health hazard list. Of the 835 substances 335 are carcinogens, mutagens (causing genetic mutations) and teratogens (causing birth defects) and are considered special health hazard substances in a pure form or in a mixture at a concentration of 0.1% or greater. The other 500 substances are flammable, explosive, reactive or corrosive substances and are considered special health hazard substances in a pure form or in a mixture at very high concentrations, e.g., 80%, 90%, 95%. *See* Rosenman Affidavit, Defendants' App. at A19.

The DEP and the Department of Health have adopted regulations implementing the Right to Know Act, N.J.A.C. 7:1G-12, et. seq., N.J.A.C. 8:59-1.1, et seq. As required by the Act, environmental surveys and workplace surveys have been distributed to each employer in the State subject to the Act, including the manufacturing and processing concerns which are plaintiffs in the Chamber of Commerce and the Fragrance Materials Association cases. Unless enforcement of the Act is enjoined the employers must complete and file them as required by the Act.

B. *The OSH Act*: In 1970 Congress enacted the Occupational Safety and Health Act of 1970 ("OSH Act"). 29 U.S.C. §§ 651, et seq. Finding that personal injuries and illnesses arising out of work situations imposed a substantial burden on interstate commerce, Congress sought to assure working persons safe and healthful working conditions by, among other things, (i) authorizing the Secretary of Labor to set mandatory occupational safety and health standards applicable to businesses affecting interstate commerce, (ii) exploring ways to discover latent diseases, establishing causal connections between diseases and work, environmental conditions and conducting research relating to health problems, (iii) providing medical criteria which will assure that no employee will suffer diminished health, functional capacity, or life expectancy as a result of his work experience, (iv) providing for the development and promulgation of occupational safety and health standards, (v) encouraging the States to assume the fullest responsibility for the administration and enforcement of their occupational safety and health laws, and (vi) providing for appropriate reporting procedures. 29 U.S.C. § 651.

The OSH Act imposes a duty on each employer to furnish his employees a place of employment free from recognized hazards and to comply with occupational safety and health standards promulgated under the Act. 29 U.S.C. § 654.

The Secretary of Labor is given the power and the duty to promulgate, modify or revoke occupational safety or health standards in order to implement the purposes of the OSH Act. 29 U.S.C. § 655. An "occupational safety and health standard" is defined as "a standard which requires conditions, or the adoption or use of one or more practices, means, methods, operations, or processes, reasonably necessary or appropriate to provide safe or healthful employment and places of employment." 29 U.S.C. § 652(8).

In particular 29 U.S.C. § 655(b)(7) provides in part:

> (7) Any standard promulgated under this subsection shall prescribe the use of labels or other appropriate forms of warning as are necessary to insure that employees are apprised of all hazards to which they are exposed, relevant symptoms and appropriate emergency treatment, and proper conditions and precautions of safe use or exposure. Where appropriate, such standard shall also prescribe suitable protective equipment and control or technological procedures to be used in connecion with such hazards and shall provide for monitoring or measuring employee exposure at such locations and intervals, and in such manner as may be necessary for the protection of employees. . . .

In order to carry out the purposes of the Act the Secretary of Labor is authorized to enter, inspect and investigate places of employment. 29 U.S.C. § 657(a). Further, the Secretary of Labor, in cooperation with the Secretary of Health, Education and Welfare:

> . . . shall issue regulations requiring employers to maintain accurate records of employee exposure to potentially toxic materials or harmful physical agents which are required to be monitored or measured under section 655 of this title. Such regulations shall provide employees or their representatives with

> an opportunity to observe such monitoring or measuring, and to have access to the records thereof. Such regulations shall also make appropriate provision for each employee or former employee to have access to such records as will indicate his own exposure to toxic materials or harmful physical agents. Each employer shall promptly notify any employee who has been or is being exposed to toxic materials or harmful physical agents in concentrations or at levels which exceed those prescribed by an applicable occupational safety and health standard promulgated under section 655 of this title, and shall inform any employee who is being thus exposed of the corrective action being taken.

29 U.S.C. § 657(c)(3).

The statute mandates that information obtained under the OSH Act "shall be obtained with a minimum burden upon employers, especially those operating small businesses. Unnecessary duplication of efforts in obtaining information shall be reduced to the maximum extent feasible." 29 U.S.C. § 657(d). The Secretary of Labor and the Secretary of Health, Education and Welfare are directed to prescribe rules and regulations which they deem necessary to carry out their responsibilities under the OSH Act. 29 U.S.C. § 657(g)(2).

C. *OSHA's Hazard Communication Standard*: On November 25, 1983 OSHA published its final Standard for Hazard Communication. 48 Fed. Reg. 53,340-348.[2] The Standard is codified at 29 C.F.R. §§ 1910.1200, et seq. Its purpose is stated to be:

> . . . to ensure that the hazards of all chemicals produced or imported by chemical manufacturers or

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[2] There are pending in the Court of Appeals for the Third Circuit petitions challenging the validity of OSHA's Hazard Communication Standard. *United Steelworkers of America, et al. v. Thorne G. Auchter*, Docket Nos. 83-3554, et al.

> importers are evaluated, and that information concerning their hazards is transmitted to affected employers and employees within the manufacturing sector. This transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, material safety data sheets and employee training.

29 C.F.R. § 1910.1200(a).

The Standard is applicable to all employers in Standard Industrial Classification ("SIC") Codes 20-39, which in general terms includes manufacturing operations. The plaintiff enterprises in the consolidated cases are included in SIC Codes 20-39. 29 C.F.R. § 1910.1200(b)(1).

Chemical manufacturers and importers are required to evaluate chemicals produced in their workplaces or imported by them to determine if they are hazardous. Criteria and methods of evaluation are prescribed in the Standard. Information concerning any physical or health hazards determined to be present must be transmitted to "downstream" manufacturers by product labels on containers leaving the workplace and by accompanying material safety data sheets ("MSDS"). After evaluation of workplace chemicals, employers are required to develop and implement a written hazard communication program for their workplaces "which at least describes how the criteria specified . . . for labels and other forms of warning, material safety data sheets and employee information and training will be met. . . ." 29 C.F.R. § 1910.1200(d) and (e).

1. *Hazard Determination/Material Safety Data Sheets*: The primary responsibility for hazard evaluation is placed on chemical manufacturers and importers of hazardous chemicals. 29 C.F.R. § 1910.1200(d)(1). Each chemical must be evaluated for its potential to cause adverse health effects, as well as its potential to pose physical hazards

(e.g. flammability). The Standard provides general criteria for the manufacturer or importer to follow in evaluating the scientific evidence on whether a chemical may cause an adverse health effect and provides specific rules for the evaluation of chemical mixtures. 29 C.F.R. § 1910.1200(d)(2), (5); *see* 48 Fed. Reg. 53,347 (Appendix B to Standard). In addition, the Standard establishes, by reference to several enumerated lists, a "floor list" of approximately 2300 hazardous chemicals. 29 C.F.R. Part 1910, Subpart Z; 29 C.F.R. § 1910.1200(d)(3), (4).

The MSDS for each hazardous chemical is the primary means, under the Standard, for transmitting comprehensive hazard information. 48 Fed. Reg. 53,305. The MSDS will include the physical and chemical characteristics of the substance, its health and safety hazards, including symptoms of exposure, recommended maximum exposure limits, primary routes of exposure, generally applicable safe handling and use precautions and control measures. 29 C.F.R. § 1910.1200(g). Employer-purchasers will receive copies of the MSDS's produced by manufacturers for all hazardous chemicals in their workplace and will be required to ensure that they are readily accessible to all employees. *Id.* Workplace container labels designed to communicate to employees by message, word, picture or symbol, the dangers of the chemicals in the container, are keyed to the readily-available MSDS.

2. *Labeling*: Chemical manufacturers, importers and distributors must ensure that containers of hazardous chemicals leaving the workplace are appropriately labeled, and all manufacturing employers must similarly label in-plant containers. 29 C.F.R. § 1910.1200(f)(1), (4). The labels on containers leaving the workplace must include at least the "identity" of the chemical, appropriate hazard warnings and the name and address of the manufacturer, importer or other responsible party. *Id.*

The labeling requirement under the Standard expressly takes into account the applicability of other existing stat-

utes or substance-specific health standards regulating hazardous materials. 29 C.F.R. § 1910.1200(a)(4). The Standard also directs that if labels already applied by a manufacturer, distributor or improper comply with the Standard's requirements, additional labels need not be applied. 29 C.F.R. § 1910.1200(f)(9).

The Standard recognizes the practical problems of labeling within a plant and allows a flexible approach. 48 Fed. Reg. 53,336. For example, if there are a number of stationary work containers which have similar contents (such as reactor vessels) within a work area, the employer may post signs or placards which convey the required hazardous information rather than individually labeling each piece of equipment. Employers may also use written material other than labels (e.g. process sheets, batch tickets, etc.) on stationary process equipment, as long as it is readily accessible to employees working in the area. In addition, the Standard as promulgated does not require labels on piping and support systems, the most costly items in any plan. 29 C.F.R. § 1910.1200(c). This resulted in an estimated cost savings of approximately 58% to 67% of the initial compliance cost and 70% of the annual cost associated with earlier proposals for the Standard which required such labeling. 48 Fed. Reg. 53,325.

3. *Employee Training*: The Standard specifies the subjects which must be covered by employee training programs. 29 C.F.R. § 1910.1200(h)(2).

4. *Trade Secrets*: The Standard permits a chemical manufacturer, importer or employer to withhold the specific chemical identity from the MSDS if:

> (i) The claim that the information withheld is a trade secret can be supported;
>
> (ii) Information contained in the material safety data sheet concerning the properties and effects of the hazardous chemical is disclosed;

(iii) The material safety data sheet indicates that the specific chemical identity is being withheld as a trade secret; and

(iv) The specific chemical identity is made available to health professionals, in accordance with the applicable provisions of this paragraph.

29 C.F.R. § 1910.1200(i)(1).

If a treating physician or nurse determines that a medical emergency exists and that the chemical identity of a hazardous chemical is necessary for emergency or first aid treatment, the entity claiming a trade secret must immediately disclose the identity of the chemical. In non-emergency situations more complex procedures are required to obtain the identity of the chemical. These procedures are designed to provide greater protection to the trade secret. 29 C.F.R. § 1910.1200(i)(2) and (3).

D. *The Alleged Burdens Imposed by the Right to Know Act*: Plaintiffs in the Chamber of Commerce Action have submitted a number of affidavits of corporate executives and scientists describing the effect of having to comply both with OSHA's Hazard Communication Standard and the Right to Know Act.

Labeling of pipelines, including valves, vents, inlets, drains and sample connections would, according to plaintiffs, impose enormous burdens in manpower and money. Some plants, for instance, have thousands of locations which would require labeling. In view of the fact that different materials may be sent through the pipes, it might be necessary to change the labels continually.

It is claimed that the requirement that within two years containers and pipelines be labeled with the chemical names and Chemical Abstract Service registry numbers ("CAS numbers") of the five predominant substances contained in or passing through them (whether hazardous or not) imposes a heavy financial burden and

serves to confuse employees and others with an excess of information.

Double sets of labels, reports and training programs will be required to meet both the federal and state requirements.

Out-of-state suppliers may be unwilling to provide the information which New Jersey requires be placed on the labels, particularly when trade secrets are involved. This will result in loss of essential suppliers or an inability to comply with the Right to Know Act provisions.

The education program requirement imposes a far greater burden on employers than the federal standard because it must include extensive information about the Right to Know Act and about all hazardous substances in a plant whether or not in the individual employee's workplace.

The most serious consequences of the Right to Know Act which plaintiffs foresee is the threatened loss of trade secrets. Unlike the federal standard, under which employers can claim trade secret protection for all hazardous substances, the Act mandates disclosure of the presence of all special health hazard substances. There are 835 substances in this category, and as to them no employer may seek trade secret protection. In many instances, plaintiffs assert, the identification of the presence of one of these substances will necessarily result in the disclosure of valuable trade secrets which heretofore have been protected from competitors and others. It is not necessary to know the quantity of the substance involved. According to plaintiffs the mere presence of the substance often constitutes the trade secret.

Defendants have sought to answer plaintiffs' analysis of the effects of the Right to Know Act, and at least to some extent have done so in the affidavits submitted on their behalf (see in particular Rosenman Affidavit, Defendants' Appendix at A13, et seq.). They note that there

are many exceptions to the labeling requirements, such as containers labeled pursuant to various federal acts (other than the OSH Act) and that alternate methods of labeling are permitted in special situations. Defendants demonstrate that many state requirements correspond with or complement the federal requirements and that employer compliance with one set of requirements can be used to meet the other set.

Defendants seek to minimize the loss of trade secrets risk which the Right to Know Act creates. There are affidavits which state that using available technology it is almost always possible to ascertain the component substances of a product, and therefore the listing of chemical substances will not disclose anything which a competitor or other interested person could not ascertain in any event. Further, defendants note that of 50,000 chemicals which are commonly used, only 835 are in the category of special health hazard substances. All the rest are entitled to trademark protection under the Right to Know Act. Finally, defendants argue that these 835 substances are capable of causing extraordinary harm to workers and others, and that if there is a conflict between the employer's right to protect his trade secrets and a worker's need to know the identity of the substance to prevent or treat injury or disease, the interest in maintaining trade secrets must give way to the more important health needs.

It is impossible on the present record to measure with any precision the extent of the increased burden imposed by the Right to Know Act, although given the additional requirements of the Act the extra burden must of necessity be considerable. I suspect that not even an extended evidential hearing would enable a court to determine the extent of the risk of trade secrets which would result from implementation of the Right to Know Act. Plaintiffs discussed their trade secrets in only the most general terms. Even when dealing with a claim of a single trade

secret, the determination of the validity of the claim is a difficult process at best. Discussion of a threat to all of the asserted trade secrets of all industrial concerns in New Jersey is necessarily imprecise and nebulous. Similarly defendants' assertions that there is little danger to this undifferentiated mass of trade secrets cannot be totally convincing. The most that can be said is that there is a likelihood that the disclosure requirements will involve a substantial risk of the loss of some trade secrets by some of New Jersey's employers.

III. *Conclusions of Law*

A. *Jurisdiction*: Plaintiffs in the Fragrance Materials Association Action assert federal jurisdiction under 28 U.S.C. § 1331 (federal question) and 28 U.S.C. § 1337(a) (commerce regulation). Plaintiffs in the Chamber of Commerce Action assert federal jurisdiction under 28 U.S.C. § 1331, 42 U.S.C. § 1983 (deprivation of federal rights under color of state law) and 28 U.S.C. § 2201 (Declaratory Judgment Act). The latter statute, of course, is not an independent basis of jurisdiction and simply provides for a remedy when a federal court already has jurisdiction.

Defendants urge that under the rule set forth in *New Jersey State AFL-CIO v. New Jersey*, Docket No. 84-5196 (3d Cir. Nov. 8, 1984) and *Exxon Corp. v. Hunt*, 683 F.2d 69 (3d Cir. 1982), *cert. denied*, 103 S. Ct. 727 (1983), this court lacks jurisdiction notwithstanding the fact that plaintiffs rely on a federal statute and regulation as the bases of their claims. Plaintiffs' principal claim is that the Right to Know Act has been preempted by the federal Hazard Communication Standard. In *Exxon* plaintiffs sought a declaratory judgment that the existence of the federal Superfund Act, 42 U.S.C. § 9631, preempted New Jersey's Spill Act, N.J.S.A. 58:10-23.11a, and exempted them from paying the tax imposed by the Spill Act. The Court of Appeals ruled that "a complaint

seeking a declaration that federal law preempted state regulations did not raise a federal question" and that "a declaratory judgment complaint does not state a cause of action arising under federal law when the federal issue is in the nature of a defense to a state law claim," 638 F.2d at 73.

In *State AFL-CIO* plaintiffs sought a declaratory judgment that the Employment Retirement Income Security Act of 1974 (ERISA) preempted four New Jersey statutes regulating "closed panel" dental insurance plans. Affirming the district court's dismissal of the action for lack of subject matter jurisdiction, the Court of Appeals held that the case did not arise under federal law since the declaratory relief was sought "only to stave off action by New Jersey against plan providers which might be taken under the state statute." Slip op. at p. 4.

I do not believe these cases are controlling here. Rather, *Shaw v. Delta Airlines, Inc.*, 77 L.Ed. 2d 490 (1983) governs the question of jurisdiction. The issue in that case was the extent to which ERISA preempted New York's Human Rights Law and Disability Benefits Law. In a footnote the Supreme Court stated:

> Here, . . . companies subject to ERISA regulation seek injunctions against enforcement of state laws they claim are pre-empted by ERISA, as well as declarations that those laws are pre-empted. *It is beyond dispute that federal courts have jurisdiction over suits to enjoin state officials from interfering with federal rights.* See *Ex Parte Young*, 209 U.S. 123, 160-162, 52 L. Ed. 714, 28 S. Ct. 441 (1908). A plaintiff who seeks injunctive relief from state regulation, on the ground that such regulation is pre-empted by a federal statute which, by virtue of the Supremacy Clause of the Construction, must prevail, thus presents a federal question which the federal courts have jurisdiction under 28 U.S.C. § 1331

> [28 U.S.C.S. § 1331] to resolve. . . . (Emphasis added.)

Id. at 500, n. 14.

Plaintiffs here seek injunctive as well as declaratory relief, thus distinguishing the case from *Exxon* and *State AFL-CIO*. This may appear to be a distinction without a difference, but at least in this Circuit the Supreme Court's ruling in *Shaw* gives significance to the distinction.

Further, plaintiffs' trade secret claims allege a deprivation of property without due process of law, a different claim altogether from those advanced in *Exxon* and *State AFL-CIO*. Thus I conclude that the instant cases arise under federal law and that jurisdiction lies in this court.

B. *Preemption*: The principal contention of plaintiffs in both actions is that OSHA's Hazard Communication Standard preempts the Right to Know Act. It must be noted in this regard that when OSHA issued the Standard it limited the Standard's coverage to employers in the manufacturing sector, SIC codes 20 through 39. 29 C.F.R. § 1910.1200(b)(1). It reserved "the right to separately regulate other segments in the future." 48 Fed. Reg. 53,284-87, 53,334. The Right to Know Act covers both the manufacturing and other sectors. In this section of this opinion I am proceeding on the assumption that preemption, if applicable, would apply only to state regulations affecting manufacturing businesses covered by the federal Standard, i.e., employers within SIC codes 20 through 39.

It is hornbook law that under the Supremacy Clause of the Constitution, Art. 6, Ch. 2, when a state statute conflicts with a federal statute which has preempted the subject matter of the legislation, the state statute must give way. *Maryland* v. *Louisiana*, 451 U.S. 725, 746-47 (1981). Preemption may be either express or implied

and "is compelled whether Congress' command is explicitly stated in the statute's language or implicitly contained in its structure and purpose." *Jones* v. *Rath Packing Co.*, 430 U.S. 519, 525 (1977).

In the present case Congress addressed the preemption question in the statute itself, and therefore the question is one of statutory interpretation, not implied preemption. Section 18 of the OSH Act provides:

> (a) Nothing in this chapter shall prevent any State agency or court from asserting jurisdiction under State law over any occupational safety or health issue with respect to which no standard is in effect under section 655 of this title.
>
> (b) Any State which, at any time, desires to assume responsibility for development and enforcement therein of safety and health standards relating to any occupational safety or health issue with respect to which a Federal standard has been promulgated under section 655 of this title shall submit a State plan for the development of such standards and their enforcement.

29 U.S.C. § 667(a), (b).

The OSH Act sets forth criteria to be applied when a state plan is submitted to the Secretary of Labor for approval. Among the criteria is the requirement that when state standards are applicable to products distributed or used in interstate commerce they be "required by compelling local conditions and do not unduly burden interstate commerce." 29 U.S.C. § 667(c)(2). New Jersey has not sought federal approval of its Right to Know Act.

The language of § 18 of the OSH Act provides "both a broad grant of power to the states and a limitation on the exercise of that power." *Florida Citrus Packers v. State of California*, 549 F. Supp. 213, 216 (N.D. Cal. 1982). Section 18(a) has been consistently inter-

preted by OSHA and the courts to bar the exercise of state jurisdiction over issues addressed by an OSHA standard, even where the state law may arguably be more stringent or where OSHA has not explicitly addressed a provision. *See, e.g., Five Migrant Farm Workers v. Hoffman*, 136 N.J. Super. 242, 246 (Law Div. 1975); *Stanislawski v. Industrial Comm.*, 99 Ill. 2d 36, 457 N.E. 2d 399 (1983); *Columbus Coated Fabrics v. The Industrial Comm. of Ohio*, 1973-74 O.S.H. Rep. (BNA) ¶ 16,832 (S.D. Ohio 1973), *appeal dismissed*, 498 F.2d 408 (6th Cir. 1974).

The Hazard Communication Standard itself expressly provides that it "is intended to address comprehensively the issue of evaluating and communicating hazards to employees in the manufacturing sector, and to preempt any state law pertaining to this subject." 29 C.F.R. § 1910.1200(a)(2). Comparing the Right to Know Act and the Standard, it is apparent that the Right to Know Act deals, to a very great extent, with hazard communication in the workplace, the identification of hazardous substances, labeling, and workplace training and educational programs, the precise issues covered by the Standard. Unless one of the reasons defendants advance for not applying preemption controls, it would appear that the Right to Know Act is subject to the express preemptive effect of the federal statute and administrative Standard. *See Fidelity Fed. Sav. & Loan Ass'n v. de la Cuesta*, 458 U.S. 141, 152-54 (1982).

Defendants and intervenors first argue that preemption is unwarranted because federal jurisdiction under the OSH Act is limited to *occupational* safety and health, whereas the Right to Know Act is directed to the health and safety of the *general public*. As described above the New Jersey statute and regulations are designed to protect not only workers but also inhabitants of the state who live near industrial or other facilities and to enable fire and health officials to protect the community

from health risks and other hazards. However, to accomplish these objectives the Right to Know Act deals with precisely the same subjects in the workplace as are regulated by the OSHA Standards. The Act clearly asserts jurisdiction over occupational safety and health issues as to which a federal standard is in effect. Consequently § 18(b) of the OSH Act mandates submission of the Act and the regulations implementing it to the Secretary of Labor for approval. This approval has not been obtained or even sought.

The fact that the Right to Know Act has purposes in addition to occupational health and safety does not insulate it from the preemption provisions of the OSH Act. In *Perez v. Campbell*, 402 U.S. 637, 651-52 (1971), the Supreme Court rejected as "aberrational" the doctrine that:

> [S]tate law may frustrate the operation of federal law as long as the state legislature in passing its law had some purpose in mind other than one of frustration. Apart from the fact that it is at odds with the approach taken in nearly all our Supremacy Clause cases, such a doctrine would enable state legislators to nullify nearly all unwanted federal legislation by simply publishing a legislative committee report articulating some state interest or policy—other than frustration of the federal objective—that would be tangentially furthered by the proposed state law.

It may well be, as defendants and intervenors assert, that the Right to Know Act is not inconsistent with the federal Standard and in fact is the kind of legislation which furthers the OSH Act objectives and is therefore permitted under that Act. Congress, however, has required that a determination in this regard must be made in the first instance by the Secretary of Labor and that until such a determination is made an OSHA standard preempts the area of regulation.

Defendants and intervenors have relied heavily on *Pacific Gas & Elec. v. State Energy Res. Conservation & Dev't Comm'n*, 75 L.Ed.2d 752 (1983). In that case the Atomic Energy Act expressly permitted states to regulate for "purposes other than protection against radiation hazards." *Id.* at 752, *quoting* 42 U.S.C. § 2021 (k). No prior approval of a federal agency was required, as in the case of state regulation of an area covered by an OSHA Standard. Thus, inquiry into the purposes of the State enactment was made relevant by the express terms of the federal statute. The Supreme Court reasoned that:

> At the outset, we emphasize that the statute does not seek to regulate the construction or operation of a nuclear powerplant. It would clearly be impermissible for California to attempt to do so, for such regulation, even if enacted out of non-safety concerns, would nevertheless directly conflict with the NRC's exclusive authority over plant construction and operation. . . . the federal government has occupied the entire field of nuclear safety concerns, except the limited powers expressly ceded to the states. When the federal government completely occupies a given field or an identifiable portion of it, as it has done here, the test of preemption is whether "the matter on which the state asserts the right to act is in any way regulated by the federal government."

Id. at 770. The New Jersey Right to Know Act seeks, among other things, to regulate employer activity in the workplace in regard to the dissemination of information on hazardous substances. This is an issue expressly preempted by the federal Standard.

Defendants argue that the preemption provisions of the OSH Act are inapplicable because the Hazards Communication Standard is not a "standard", rather it is a regulation. Both § 18(a) and § 18(b) use the term

"standard". Subsection (a) permits a state to act on an issue "to which no *standard* is in effect." Subsection (b) requires a state to obtain federal approval of any of its regulatory requirements relating to an occupational safety or health issue "with respect to which a Federal *standard* has been promulgated."

The OSH Act provides for the adoption of standards promulgated pursuant to 29 U.S.C. § 655(b) and it provides for the promulgation of regulations pursuant to 29 U.S.C. § 657(g)(2). Defendants urge that the Hazard Communication Standard does not fall within the statutory definition of "standard", namely, a rule "which most adequately assures, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity even if such employee has regular exposure to the hazard dealt with by such standard for the period of his working life. . . ." 29 U.S.C. § 655(b)(5). Relying on *Louisiana Chemical Ass'n v. Bingham*, 657 F.2d 777 (5th Cir. 1981), defendants contend that the Hazard Communication Standard, not being "hazard specific", is a regulation—any rule the Secretary of Labor "may deem necessary to carry out [his] responsibilities under [the Act] . . . ." 29 U.S.C. § 657(g)(2).

I do not believe that defendants' position is well taken. In § 3(8) of the OSH Act, an occupational health and safety standard is defined as a standard "which requires conditions or the adoption or use of one or more practices, means, methods, operations or processes, reasonably necessary or appropriate to provide safe or healthful employment and places of employment." 29 U.S.C. § 652(8). Section 6(b)(5) of the OSH Act, 29 U.S.C. § 655(b)(5) provides for the development of occupational health and safety standards addressing toxic materials and harmful physical agents. Finally, § 6(b)(7) of the statute requires that a standard promulgated thereunder "prescribe the use of labels or other appropriate forms of warn-

ing . . . as are necessary to ensure that employees are apprised of all hazards to which they are exposed, relevant symptoms and appropriate emergency treatment, and proper conditions and precautions of safe use or exposure." Taken together, these statutory provisions support the status of the Hazard Communication Standard as a § 6(b) standard.

In addition, the legislative history of the OSH Act clearly supports the validity of the Hazard Communication Standard as a § 6(b) standard. At the time of the passage of the OSH Act, Congress, in discussing what would constitute a § 6(b) standard, stated:

> Standards promulgated under this procedure would include requirements regarding the use of labels or other forms of warning to alert employees to the hazards covered by the standard and to provide them with necessary information regarding proper methods of use or exposure and appropriate emergency treatment, where appropriate, such standards would also prescribe protective equipment and other control measures, as well as, in the case of toxic substances or harmful physical agents, requirements for monitoring conditions or measuring employee exposure as may be necessary to protect employee's health.

1970 U.S. Code Cong. & Admin. News at 5183.

Furthermore, the position of the Agency is clearly set forth in its comments to the Standard, 48 F.R. 53320, and should be accorded the significant weight which courts give to interpretations of an implementing agency. *Blum v. Bacon*, 457 U.S. 132, 141 (1982); *Chevron U.S.A., Inc. v. Natural Resources Defense Counsel, Inc.*, 81 L.Ed.2d 694 (1984). OSHA's comments distinguish the Standard from a § 8(g) on the basis that (1) the Hazard Communication Standard requires evaluation of chemical hazards, development of material safety data

sheets, and the establishment of educational programs, thereby requiring affirmative action on the part of manufacturers, importers, distributors and employers as to practices, means and methods; (2) the core of the requirements contained in the Standard pertain only to hazardous chemicals; and (3) the labeling and warning requirements of the Standard fit clearly within the language of § 6(b)(7). These characteristics provide a marked contrast to the record keeping provisions that were held to be a § 8(g) regulation, and not a standard, in *Louisiana Chem. Ass'n v. Bingham*, 657 F.2d 777 (5th Cir. 1981). In *Bingham*, the Court held that the record access rule which was (1) aimed primarily at the detection of health risk patterns, not at the correction of that risk, (2) which involved a voluntary record creation program, and (3) incorporated thousands of substances into the rule that probably did not present any risk of injury, was not a § 6 Standard. *Id.* at 781.

Thus I conclude that the Hazard Communication Standard is a "standard" and that, therefore, the preemptions of 29 U.S.C. § 667 are applicable.

Defendants further urge that the preemption provisions of the OSH Act are not applicable at the present time because certain of the provisions of the Standard do not become effective until a later date in order to give employers an opportunity to put themselves in compliance. Section 18(a) of the OSH Act permits states to act concerning issues as to which no standard is "in effect". The language of the Act and common sense require the conclusion that a standard is "in effect" when it is issued (November 25, 1983, in this case) even though for practical reasons employers are given additional time to prepare to meet the requirements of the standard. Given this interpretation Section 18(a) complements Section 18(b) which requires federal approval of state action if the state seeks to regulate any issue as to which a federal standard "has been promulgated".

The Hazard Communication Standard is in effect for preemption purposes.

C. *The Extent of Preemption*: The new Standard covers only employers in the manufacturing sector, SIC codes 20 through 39. The employer plaintiffs in both the Chamber of Commerce Action and the Fragrance Materials Association Action are in the manufacturing sector covered by those codes. The Chamber of Commerce and perhaps some of the other trade association plaintiffs include in their membership employers who are not covered by those codes. Plaintiffs in the Chamber of Commerce Action urge that the preemption doctrine precludes application of the Right to Know Act to these groups as well as to employers in the manufacturing sector.

Plaintiffs advance two arguments in support of their position. First, they urge that non-inclusion of other employers in the Standard represents a deliberate decision by OSHA that these other employers should not be subject to hazard communication requirements, and that imposition of the Right to Know Act requirements would defeat this decision. Second, and somewhat inconsistently, plaintiffs argue that issuance of a federal standard regulating these other sectors is imminent, and that in such a situation state regulations should not intrude. Neither argument is at all persuasive.

Once again, the question is governed by the express preemption provision of the OSH Act. Section 18(a) affirmatively confers jurisdiction on the states to deal with any occupational safety or health issue as to which no OSHA standard is in effect. No OSHA hazard communication standard is in effect for non-manufacturing employers. Consequently New Jersey is free to act as to those employers.

The fact that OSHA may intend to adopt a standard covering non-manufacturing employers is of no moment. Federal approval of state occupational safety and health

standards under Section 18(b) of the OSH Act is required only when a federal standard on the subject "has been promulgated". No federal standard has been promulgated covering employers in the non-manufacturing sectors. Consequently federal approval of state regulation of employers in those sectors is not required.

The defendants urge that preemption does not apply to those provisions of the Right to Know Act which are necessary to carry out the non-workplace purposes of the Act, namely, the provisions designed to assist emergency response services, to enforce compliance with environmental laws and regulations, to provide the public with information concerning toxic substances used in their communities and emitted into the environment, and to assist health professionals and others in diagnosing, treating and preventing adverse health effects from exposure to toxic substances.

Defendants would exempt from preemption the statutory and regulatory requirements for hazardous substance lists, the surveys, the fact sheets and the labeling provisions.[3] There seems little question but that New Jersey

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[3] The specific provisions of the right to Know Act which defendants urge not be considered preempted even with respect to employers in the manufacturing sector are:

1. The requirement that the Department of Health and the DEP develop and publicly distribute lists of hazardous substances used, manufactured, stored, or emitted from workplaces in the state. These lists are (a) the environmental hazardous substances list, N.J.S.A. 34:5A-4a; (b) the workplace hazardous substances list, N.J.S.A. 34:5A-5a; and (c) the special health hazard substances list, N.J.S.A. 34:5A-5b.

2. The provision that disclosure of information concerning emissions into the environment, in particular the chemical name and CAS number, may not be withheld from the public by means of a trade secret claim. N.J.S.A. 34:5A-15h.

3. The provision that information concerning special health hazard substances, in particular the chemical name and CAS number, may not be withheld from the public by means of a trade

could enact legislation and regulate employers in order to achieve the non-workplace objectives to which defendants refer. Unfortunately, in the present case the non-workplace regulatory plan is superimposed upon a regulatory foundation which was designed to and does cover precisely the same occupational health and safety issues as are the subject of the OSHA Hazard Communication Standard. The workplace and non-workplace regulatory schemes are inextricably intertwined. The fact that this regulatory base also serves other ends does not save it from preemption. To hold otherwise would permit ready nullification of the Section 18 preemption provision.

It would be otherwise if a state were to adopt a statute and regulations directed as a bona fide effort solely to achieve the kind of non-workplace objectives to which defendants refer. In such a situation the OSH Act's preemption provisions would not be applicable. If in fact the non-workplace regulatory scheme impinged on an OSHA standard, the often difficult question of implied preemption would have to be addressed. But that is not the present case.

Thus the Hazard Communication Standard preempts the Right to Know Act only as the Act covers employers

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secret claim. N.J.S.A. 34:5A-3s; 34:5A-3t; 34:5A-5b; N.J.A.C. 8:59-10.

4. The requirement that employers complete the environmental survey, N.J.S.A. 34:5A-7b; 34:5A-3k; the emergency service information survey, N.J.A.C. 7:1G-5; and the workplace survey, N.J.S.A. 34:5A-7a; 34:5A-3y, thereby listing those hazardous substances on the Department of Health and DEP lists that are present in their facilities or known to be emitted into the environment.

5. The requirement that the Department of Health prepare, and publicly distribute, hazardous substance fact sheets describing the health effects of exposure to hazardous substances located in employers' facilities or known to be emitted into the environment. N.J.S.A. 34:5A-3n; 34:5A-10a.

6. The provision requiring employers to label containers with the chemical name and CAS numbers of the contents of the containers. N.J.S.A. 34:5A-14a; 34:5A-14b.

in SIC codes 20 through 39. However, as to those employers the Right to Know Act is preempted in its entirety.

D. *Trade Secrets*: Plaintiffs contend that the requirement of the Right to Know Act that employers disclose special health hazard substances without trade secret protection will deprive them of property without due process of law. This issue is academic for employers in the manufacturing sector because the trade secret provisions of the Right to Know Act along with its other provisions have been preempted by the federal standard. The issue is not academic, however, for other categories of employers who remain subject to the Right to Know Act.

It will be recalled that the Act contains a procedure by which employers may claim that the presence of designated substances constitutes a trade secret and that if the trade secret claim can be substantiated the substance will not be revealed in the labels and lists to which the public has access. It will also be recalled that, unlike the federal standard, the Right to Know Act provides for a category of particularly dangerous chemicals designated special health hazard substances, as to which employers are not allowed to obtain trade secret protection. Disclosure of these substances, plaintiffs assert, will result in the loss of trade secrets which may have been the product of substantial and costly research endeavors. The forced disclosure of these trade secrets, it is said, will impair or destroy the employer's investment and endanger his ability to compete.

1. *Ruckelshaus v. Monsanto Co.*: Many of the questions involved in this aspect of the case were considered in the Supreme Court's decision in *Ruckelshaus v. Monsanto Co.*, 81 L.Ed.2d 815 (1984). That case dealt with the disclosure of trade secrets of pesticide manufacturers who were required to register with federal agencies under the Federal Insecticide, Fungicide, and Rodenticide

Act ("FIFRA"), 7 U.S.C. §§ 136, et seq. Three periods of time were pertinent to the Court's decision: (i) Prior to amendments enacted in 1972, FIFRA was silent with respect to the Environmental Protection Agency's ("EPA") use and disclosure of data submitted to it in connection with an application for registration. (ii) By virtue of the 1972 amendments to FIFRA, during the period from October 22, 1972 through September 30, 1978 a pesticide manufacturer submitting data was given an opportunity to protect its trade secrets from disclosure by designating them as trade secrets at the time of submission. Under FIFRA EPA was free to use non-trade secret data when considering the application of another registrant, provided EPA required the subsequent application to pay reasonable compensation to the original submitter. The statute, however, prohibited EPA from disclosing publicly, or considering in connection with the application of another, any data submitted by an applicant if both the applicant and EPA determined the data to constitute trade secrets. (iii) FIFRA was further amended effective October 1, 1978. Under that amendment pesticide registrants were granted a 10-year period of exclusive use for data on new active ingredients contained in pesticides registered after September 30, 1978. § 3(c)(1)(D)(i). All other data submitted after December 31, 1969 could be cited and considered in support of another application for 15 years after the original submission if the applicant offers to compensate the original submitted. § 3(c)(1)(D)(ii). Absent agreement of the parties on compensation, compensation is set by binding arbitration, which is not reviewable absent fraud or misrepresentation. Data not qualifying for either the 10-year period of exclusive use or the 15-year period of compensation may be considered by EPA without limitation. § 3(c)(1)(D)(iii). Finally the 1978 amendment provides for disclosure of all health, safety and environmental data to qualified requesters notwithstanding the prohibition against disclosure of

trade secrets. Disclosure of information that would reveal "manufacturing or quality control processes" or certain details about deliberately added inert ingredients is not authorized unless "the Administrator has first determined that the disclosure is necessary to protect against an unreasonable risk of injury to health or the environment." §§ 10(d)(1)(A) to (C).

Monsanto Company was one of a small group of companies that invent and develop new active ingredients for pesticides and conduct most of the research and testing with respect to those ingredients. The development process may take 14 to 22 years, and it is usually that long before a company can expect any return on its investment. Monsanto instituted suit in the United States District Court against EPA's Administrator seeking injunctive and declaratory relief against the data-consideration and data-disclosure provisions of FIFRA, alleging, among other things, an unconstitutional taking of property without just compensation.

The District Court declared, among other things, that the statutory provisions of a 10-year period of exclusive use, the 15-year period of compensation and the use for health, safety and environmental purposes were unconstitutional. In reaching this result the District Court made the following determinations:

1. Monsanto possessed property right in the data it submited.

2. The data consideration provisions contained in § 3(c)(1)(D) appropriated for the benefit of Monsanto's competitors Monsanto's property rights.

3. Monsanto's property was being appropriated for a private purpose and this interference was much more significant than the public good that the appropriation might serve.

4. The question of the FIFRA disclosure provisions constituted a taking of Monsanto's property, and the cost

to Monsanto significantly outweighed any benefit to the general public from having the ability to scrutinize the data. The District Court appeared to believe that the public could derive the assurances it needed about the safety and effectiveness of a pesticide from EPA's decision to register the product and to approve the label.

5. The compulsory binding arbitration scheme contained in § 3(c)(1)(D)(ii) did not adequately provide compensation for the property taken.

6. A remedy was not available under the Tucker Act of the deprivations of property effected by §§ 3 and 10 of FIFRA.

On direct appeal the Supreme Court reversed and remanded for further proceedings. Both the holdings and the Court's step by step analysis bear critically on the present case.

The Court first addressed the question whether data of the kind which Monsanto submitted to EPA was a property interest protected by the Fifth Amendment's Taking Clause. It noted that property interests are not created by the Constitution but must stem from an independent source such as state law. After reviewing Missouri law (Monsanto being headquartered in that state), the Restatement of Torts, federal cases and other legal sources, the Court concluded:

> . . . that to the extent that Monsanto has an interest in its health, safety, and environmental data cognizable as a trade-secret property right under Missouri law, that property right is protected by the Taking Clause of the Fifth Amendment.

81 L.Ed.2d at 833.

The Court then addressed the question whether a taking occurs when EPA discloses the data or considers it when evaluating another application for registration. Noting that the Court has been unable to develop any

set formula for determining when justice and fairness require that economic injuries caused by public action are to be deemed a compensable taking, and further noting that inquiry into whether a taking has occurred is an ad hoc factual inquiry, the Court stated:

> The Court, however, has identified several factors that should be taken into account when determining whether a governmental action has gone beyond "regulation" and effects a "taking." Among those factors are: "the character of the governmental action, its economic impact, and its interference with reasonable investment-backed expectations." [Citations omitted.]

81 L.Ed.2d at 834.

The Court found that the force of the third factor—interference with reasonable investment-backed expectations—"is so overwhelming, at least with respect to certain of the data submitted by Monsanto to EPA, that it disposes of the taking question regarding that data. The Court examined the expectation factor as it related to each of the three periods described above and reached a separate conclusion for each period.

With respect to the post September 30, 1978 period, the Court ruled that by reason of the provisions of the statute itself Monsanto had no reasonable expectation of non-disclosure:

> We find that with respect to any health, safety, and environmental data that Monsanto submitted to EPA after the effective date of the 1978 FIFRA amendments—that is, on or after October 1, 1978—Monsanto could not have had a reasonable, investment-backed expectation that EPA would keep the data confidential beyond the limits prescribed in the amended statute itself. Monsanto was on notice of the manner in which EPA was authorized to use and

> disclose any data turned over to it by an applicant for registration.

81 L.Ed.2d at 834.

> If, despite the data-consideration and data-disclosure provisions in the statute, Monsanto chose to submit the requisite data in order to receive a registration, it can hardly argue that its reasonable investment-backed expectations are disturbed when EPA acts to use or disclose the data in a manner that was authorized by law at the time of the submission.

81 L.Ed.2d at 835.

Answering Monsanto's contention that the requirement that a registrant give up its property interest in the data constitutes an unconstitutional condition on the right to a valuable governmental benefit, the Court noted that the federal government clearly has the power to regulate the marketing and use of pesticides and

> Thus, as long as Monsanto is aware of the conditions under which the data are submitted, and the conditions are rationally related to a legitimate government interest, a voluntary submission of data by an applicant in exchange for the economic advantages of a registration can hardly be called a taking.

81 L.Ed.2d at 835.

Prior to the 1972 amendment, FIFRA was silent with respect to EPA's authorized use and disclosure of data submitted to it in connection with an application for registration. There was in existence another statute, the Trade Secrets Act, 18 U.S.C. § 1905, which imposed a criminal penalty for any federal employee who disclosed, in a manner not authorized by law, any trade secret information revealed to him during the course of his official duties. Notwithstanding the existence of the Trade Secrets Act, the Court held that:

> Thus, with respect to any data that Monsanto submitted to EPA prior to the effective date of the 1972 amendments to FIFRA, we hold that Monsanto could not have had a "reasonable investment-backed expectation" that EPA would maintain that data in strictest confidence and would use it exclusively for the purpose of considering the Monsanto application in connection with which the data were submitted.

81 L.Ed.2d at 837.

The Court came to a different conclusion with respect to data submitted during the period from October 22, 1972 through September 30, 1978. It will be recalled that during that period the statute gave a registrant the opportunity to protect its trade secrets from disclosure by designating them as trade secrets at the time of submission. By the very terms of the statute EPA was prohibited from disclosing publicly, or considering in connection with the application of another, any data which EPA and the applicant determined to constitute trade secrets. The Court held that "[t]his explicit governmental guarantee formed the basis of a reasonable investment-backed expectation. If EPA, consistent with the authority granted to it by the 1978 FIFRA amendments, were now to disclose trade-secret data or consider that data in evaluating the application of a subsequent applicant in a manner not authorized by the version of FIFRA in effect between 1972 and 1978, EPA's actions would frustrate Monsanto's reasonable investment-backed expectation with respect to its control over the use and dissemination of the data it had submitted." 81 L.Ed.2d at 838.

Thus compensation was mandated for disclosure of any trade secrets submitted during the 1972-78 period when the statutory guarantee of secrecy was in effect. The Court observed that if negotiation or arbitration pursuant to § 3(c)(1)(D)(ii) were to yield just com-

pensation, then Monsanto would have no claim against the government for a taking. Since no arbitration had yet been undertaken, "any findings that there has been an actual taking would be premature." 81 L.Ed.2d at 839.

The Court summarized its "taking" rulings as follows:

> In summary, we hold that EPA's consideration or disclosure of data submitted by Monsanto to the agency prior to October 22, 1972, or after September 30, 1978, does not effect a taking. We further hold that EPA consideration or disclosure of health, safety, and environmental data will constitute a taking if Monsanto submitted the data to EPA between October 22, 1972, and September 30, 1978; the data constituted trade secrets under Missouri law; Monsanto had designated the data as trade secrets at the time of its submission; the use or disclosure conflicts with an explicit assurance of confidentiality or exclusive use contained in the statute during that period; and the operation of the arbitration provision does not adequately compensate for the loss in market value of the data that Monsanto suffers because of EPA's use or disclosure of the trade secrets.

81 L.Ed.2d at 839.

The Court concluded that any taking of private property that occurred by operation of FIFRA's data-disclosure and data-consideration provisions between October 22, 1972 and September 30, 1978, was a taking for public, not private, use, even though subsequent applicants may benefit from the disclosure of prior applicants.

Next, the Court cited the rule that equitable relief is not available to enjoin an alleged taking of private property for a public use when a suit for compensation can be brought against the sovereign subsequent to the

taking. It rejected the District Court's determination that the Tucker Act remedy is unavailable for whatever taking may occur due to EPA activity pursuant to FIFRA. It held that where the operation of the data-consideration and data-disclosure provisions of FIFRA effect a taking of property belonging to Monsanto, an adequate remedy for the taking exists under the Tucker Act, and therefore the District Court erred in enjoining the taking. It further held that until Monsanto negotiates with a beneficiary of its data filings and until the controversy goes through arbitration Monsanto's claims with respect to the constitutionality of the arbitration scheme would not be ripe for adjudication.

In conclusion the Court stated:

> We find no constitutional infirmity in the challenged provisions of FIFRA. Operation of the provisions may effect a taking with respect to certain health, safety, and environmental data constituting trade secrets under state law and designated by Monsanto as trade secrets upon submission to EPA between October 22, 1972, and September 20, 1978. But whatever taking may occur is one for a public use, and a Tucker Act remedy is available to provide Monsanto with just compensation. Once a taking has occurred, the proper forum for Monsanto's claim is the Claims Court. Monsanto's challenges to the constitutionality of the arbitration procedure are net yet ripe for review.

81 L.Ed.2d at 843-44.

2. *Trade Secrets as Property*: In *Monsanto* the Court weighed FIFRA's data submission provisions against the requirements of the Fifth Amendment. In the present case, since state action is involved, Fourteenth Amendment due process requirements are implicated. However, the same criteria will control the outcome. Following the Supreme Court's rule in *Monsanto*, it must

first be determined whether trade secrets which non-manufacturing employers submit pursuant to the Right to Know Act are property rights which are protected from governmental taking without just compensation.

It is well established in New Jersey law, as in the law of most jurisdictions, that trade secrets are property rights. *E.g., Sun Dial Corp. v. Rideout*, 16 N.J. 252 (1954), citing, *Restatement of Torts*, § 757, comment 6; *cf.* N.J.S.A. 34:5A-3(g) (defining "trade secrets"). Although no case has been brought to my attention determining whether an uncompensated taking of a trade secret would violate the State Constitution, I see no reason why the New Jersey Supreme Court would not take the same approach as the United States Supreme Court in this regard.

The intervenors argue that since state law defines the property interest in question, when the Right to Know Act was enacted requiring disclosure of certain trade secrets, it simultaneously redefined the property interest in those trade secrets to exclude the right of secrecy. By so defining the property right, compelled disclosure could not result in a taking of property.

This circular reasoning is unpersuasive. In *Monsanto* the Supreme Court refuted EPA's similarly strained argument that FIFRA had preempted state laws by declaring that trade secrets were not property rights:

> This argument proves too much. If Congress can "pre-empt" state property law in the manner advocated by EPA, then the Taking Clause has lost all vitality. This Court has stated that a sovereign, "by ipse dixit, may not transform private property into public property without compensation. . . . This is the very kind of thing that the Taking Clause of the Fifth Amendment was meant to prevent." Webb's

> Fabulous Pharmacies, Inc. v. Beckwith, 449 US, at 164, 66 L Ed 2d 358, 101 S Ct 446.

81 L.Ed.2d at 838-839.

Trade secrets are property rights under New Jersey law. The Right to Know Act does not change these rights. These are rights which are protected from a taking without just compensation.

3. *Right to Know Act Disclosure as a Taking*: Still following the Supreme Court's lead in *Monsanto*, it must be determined whether the mandated disclosures of trade secrets under the Right to Know Act are "takings" which will trigger a right to compensation. I conclude that they are not.

The factors to be considered in determining whether particular governmental regulation effects a taking include the character of the governmental action, its economic impact and its interference with reasonable investment-backed expectations. Here the state is acting in an area of great public concern—worker health, environmental effects of hazardous substances in the workplace, community health and safety as it is effected by workplace chemical substances.

No evidence whatsoever has been submitted to show what effect, if any, the Right to Know Act trade secret provisions will have on employers in non-manufacturing sectors. The affidavits in this regard were submitted by employers in the manufacturing sector, and they were couched in vague and conclusory terms. Similarly the affidavits submitted by defendants and intervenors on the trade secret issue were highly generalized, utterly lacking in specificity.

As in *Monsanto*, reasonable investment-backed expectations of employers would seem to be determinative. On this question plaintiffs focus on and would have this

court rely on the Supreme Court's ruling in *Monsanto* with respect to data submitted during the period from October 22, 1972 through September 30, 1978. However, as described above, the situation during that period was totally dissimilar from the situation in the present case. There during the 1972-1978 period the statute itself gave a registrant the opportunity to protect its trade secrets from disclosure. Registrants submitted trade secret data relying on that statutory guarantee. The 1978 amendment of FIFRA stripped away the protection of the guarantee. That is what the Supreme Court characterized as a taking.

Nothing like that has happened in New Jersey. There has been no antecedent period of disclosure during which the state committed itself to protecting trade secrets. The state has simply adopted a statute and regulations in economic and social areas in which it unquestionably has the power to act. As part of the regulatory scheme disclosure is required which may result in a loss of trade secrets.

This is just the situation which prevailed in the pre-1972 period which was addressed in *Monsanto*. Prior to the 1972 amendment FIFRA was silent with respect to EPA's authorized use and disclosure of registrants' data submitted to it. As in the case of New Jersey's Right to Know Act, there was no preexisting legislation protecting trade secrets submitted by registrants. In such a situation the entity submitting data cannot have a "reasonable investment-backed expectation" that the agency receiving the data will maintain it in confidence. Consequently disclosure of the data is not a taking for which the state must pay compensation under the Fifth Amendment or the Fourteenth Amendment.

Employers may face the unpleasant choice of disclosing trade secrets or limiting or shutting down operations in New Jersey. This may be a more onerous di-

lemma than Monsanto faced, but the reasoning in the *Monsanto* case is nevertheless applicable here: as long as the employer is aware of the conditions under which the data are submitted and as long as the conditions are rationally related to a legitimate government interest, a submission under the Right to Know Act does not constitute a taking. 81 L.Ed.2d at 835.

4. *Other Trade Secret Contentions*: Having concluded that the absence of trade secret protection for certain substances does not constitute a taking requiring compensation, it is unnecessary to pursue other inquiries which the Court made in the *Monsanto* case. In particular, it is unnecessary to determine whether, as defendants assert here, New Jersey provides a means of compensating persons whose trade secrets are taken in the course of implementing state regulatory programs, thus rendering injunctive relief inappropriate.

E. *Disposition of Motions*: The pending motions must be disposed of upon the basis of the foregoing conclusions.

Although the plaintiffs in the Chamber of Commerce Action originally moved for an order for a preliminary injunction against enforcement of the Right to Know Act, they later joined the motion for summary judgment filed by plaintiffs in the Fragrance Materials Association Action. Those plaintiffs moved for summary judgment (or, in the alternative, for a preliminary injunction) on Count I of their complaint (premption) and on Count II of their complaint (trade secrets).

Fed.R.Civ.P. 56 provides that summary judgment shall be rendered if the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law. I find that there are no genuine issues of fact insofar as the preemption and trade secret claims are concerned. The

facts relating to preemption are established by the federal and state statutes and regulations and by the undisputed legislative history of those statutes. The facts relating to trade secrets are established by the same material and by the affidavits submitted by the parties.

Consequently summary judgment will be entered in both actions (i) declaring that the Right to Know Act is preempted by the OSH Act and the federal Hazard Communication Standard to the extent that the Right to Know Act affects employers in the manufacturing sector (SIC Codes 20-39) and (ii) permanently enjoining defendants from enforcing the Right to Know Act against such employers until the Act and regulations adopted pursuant to it have been approved by the Secretary of Labor pursuant to the provisions of the OSH Act.

As a practical matter this grant of summary judgment gives the plaintiffs in the Fragrance Materials Association Action full relief and should constitute a final judgment in that action. In the Chamber of Commerce Action there remain persons who are members of the association plaintiffs who are not employers in the manufacturing sector and consequently are not within the terms of the order for summary judgment which will be entered pursuant to the preceding paragraph.

In the Chamber of Commerce Action an order will be entered (i) denying plainttiffs' motion for summary judgment on the preemption issue insofar as the Right to Know Act affects employers who are not in the manufacturing sector and (ii) denying plaintiffs' motion for summary judgment on the trade secret issue. The motion of these plaintiffs for a preliminary injunction will be denied, since, for the reasons previously discussed, they have not shown any likelihood of prevailing on the merits.

The intervenors' cross-moved for summary judgment in the Fragrance Materials Association Action on the preemption and trade secrets claims. Their motion will

be denied on the merits on the preemption claim and will not be disposed of on the trade secrets claim since summary judgment in favor of plaintiffs in that action makes it unnecessary to reach the trade secrets issue.

However, the intervenors are deemed also to have moved for summary judgment on these issues in the Chamber of Commerce Action. In that action (i) their motion for summary judgment on the preemption issue insofar as it relates to employers in the manufacturing sector will be denied; (ii) their motion for summary judgment on the preemption issue insofar as it relates to employers in the non-manufacturing sector will be granted; (iii) their motion for summary judgment on the trade secret claims will be granted.

The attorneys for plaintiffs are requested to submit appropriate forms of orders implementing this opinion.

/s/ Dickinson R. Debevoise
DICKINSON R. DEBEVOISE
U.S.D.J.

Dated: January 3,1985

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

Civil Action No. 84-3255

NEW JERSEY STATE CHAMBER OF COMMERCE, *et als.*,
Plaintiffs,

vs.

ROBERT E. HUGHEY, Commissioner of Environmental Protection, *et als.*,
Defendants,

—and—

JOSEPH H. RODRIGUEZ, Public Advocate of the State of New Jersey, *et als.*,
Defendant-Intervenors,

Civil Action No. 84-3892

FRAGRANCE MATERIALS ASSOCIATION OF THE UNITED STATES, *et als.*,
Plaintiffs,

vs.

WILLIAM VAN NOTE, Acting Commissioner of Labor for State of New Jersey, *et als.*,
Defendants,

—and—

JOSEPH H. RODRIGUEZ, Public Advocate of the State of New Jersey, *et als.*,
Defendant-Intervenors.

ORDER

[Entered on the Docket 1-11-1985]

THIS MATTER having been brought before the Court on motions of the plaintiffs in these consolidated actions for summary judgment or, in the alternative, for preliminary injunctive relief and cross-motion of the defendant-intervenors for summary judgment; and the Court having considered the moving papers, affidavits and briefs submitted by the parties and having heard the argument of counsel;

IT IS on this 10th day of January, 1985,

ORDERED as to the Chamber of Commerce Action, Civil Action No. 84-3255:

1. That summary judgment is entered in favor of plaintiffs in the Chamber of Commerce Action declaring that the New Jersey Worker and Community Right to Know Act ("Right to Know Act") is preempted by the OSH Act and the federal Hazardous Communication Standard ("Standard") to the extent that the Right to Know Act affects employers in the manufacturing sector, SIC Codes 20-39;

2. That defendants are permanently enjoined from enforcing the Right to Know Act in its entirety against employers in the manufacturing sector until the Right to Know Act and regulations adopted pursuant thereto have been approved by the Secretary of Labor pursuant to the provisions of the OSH Act;

3. That the motion for sumary judgment of plaintiffs in the Chamber of Commerce Action on the preemption issue insofar as it affects employers in the non-manufacturing sector is denied;

4. That the motion for summary judgment of the plaintiffs in the Chamber of Commerce Action on the issue of trade secrets is denied;

5. That the motion for preliminary injunction of plaintiffs in the Chamber of Commerce Action insofar as it

relates to employers not in manufacturing sector is denied;

6. That the motion for summary judgment of defendant-intervenors on the preemption issue insofar as it relates to employers within the manufacturing sector is in all respects denied;

7. That the motion for summary judgment of defendant-intervenors in the Chamber of Commerce Action on the preemption issue insofar as it relates to employers not in the manufacturing sector is granted;

8. That the motion for summary judgment of defendant-intervenors in the Chamber of Commerce Action on the issue of trade secrets insofar as it relates to employers in the manufacturing sector is granted.

/s/ Dickinson R. Debevoise
DICKINSON R. DEBEVOISE
U.S.D.C.J.

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

Civil Action No. 84-3892D and 84-3255

FRAGRANCE MATERIALS ASSOCIATION OF THE UNITED STATES; FLAVOR AND EXTRACT MANUFACTURERS' ASSOCIATION; BUSH BOAKE ALLEN, INC.; DRAGOCO, INC.; FIREMENICH, INC.; INTERNATIONAL FLAVORS AND FRAGRANCES, INC.; ISOGENICS, INC.; H.J. KOHNSTAMM & CO., INC.; V. MANE FILS, INC.; NOVILLE ESSENTIAL OIL COMPANY, INC.; POLAROME MANUFACTURING CORP.; ROURE BERTRAND DUPONT, INC.; TAKASAGO USA, INC,; UNGERER & CO.; and UNIVERSAL FRAGRANCE CORPORATION, *Plaintiffs*,

v.

WILLIAM VAN NOTE, Acting Commissioner of Labor for State of New Jersey; J. RICHARD GOLDSTEIN, Commissioner of Health for State of New Jersey; ROBERT E. HUGHEY, Commissioner of Environmental Protection for State of New Jersey, *Defendants*,

and

JOSEPH H. RODRIGUEZ, Public Advocate of the State of New Jersey; NEW JERSEY STATE INDUSTRIAL UNION COUNCIL, AFL-CIO (IUC); CITIZEN ACTION OF NEW JERSEY; PHILADELPHIA AREA PROJECT ON OCCUPATIONAL SAFETY & HEALTH (PHILAPOSH); NEW JERSEY ENVIRONMENTAL LOBBY; NEW JERSEY STATE FIREMEN'S MUTUAL BENEVOLENT ASSOCIATION (FMBA); INTERNATIONAL ASSOCIATION OF FIREFIGHTERS, NEW JERSEY AFL-CIO (IAFF); COMMUNICATION WORKERS OF AMERICA, AFL-CIO (CWA); DISTRICT THREE, INTERNATIONAL UNION OF ELECTRONIC, ELECTRICAL, TECHNICAL, SALARIED AND MACHINE WORKERS, AFL-CIO (IUE); INTERNATIONAL LADIES GARMENT WORK-

ERS' UNION, AFL-CIO (ILGWU); AMALGAMATED CLOTHING AND TEXTILE WORKERS UNION, AFL-CIO, CENTRAL AND SOUTH JERSEY JOINT BOARD (ACTWU); UNITED PAPERWORKERS INTERNATIONAL UNION, AFL-CIO (UPIU); OIL, CHEMICAL AND ATOMIC WORKERS UNION, AFL-CIO, LOCALS 8-149, 8-760, AND 8-5570 (OCAW); UNITED AUTO WORKERS UNION, AFL-CIO, LOCAL 502 (UAW); CHEMICAL WORKERS ASSOCIATION, INC.; INDEPENDENT OIL WORKERS UNION; TRENTON EDUCATION ASSOCIATION; ALUMINUM, BRICK & GLASS WORKERS INTERNATIONAL UNION, AFL-CIO, LOCAL 514-G; PENNSYLVANIA FEDERATION, BROTHERHOOD OF MAINTENANCE OF WAY EMPLOYEES, AFL-CIO; COALITION AGAINST TOXICS; LEAGUE OF CONSERVATION VOTERS (NEW JERSEY); CLEAN WATER ACTION (WASHINGTON, D.C. AND NEW JERSEY; STUDENT PUBLIC INTEREST RESEARCH GROUP OF NEW JERSEY (N.J. PIRG); ENVIRONMENTAL ACTION (WASHINGTON, D.C.); LEAGUE OF WOMEN VOTERS OF NEW JERSEY; SIERRA CLUB (NEW JERSEY); AMERICAN LUNG ASSOCIATION OF NEW JERSEY; NEW JERSEY TENANTS ORGANIZATION (NJTO); NEW JERSEY ASSOCIATION OF COUNTY HEALTH OFFICERS, and NEW JERSEY HEALTH OFFICERS ASSOCIATION,

Defendant-Intervenors.

FINAL JUDGMENT

[Filed Jan. 10, 1985]

This action came on for hearing before the Court on plaintiffs' motion for summary judgment, the Honorable Dickinson R. Debevoise, United States District Judge, presiding, and the issues having been duly heard and a decision having been rendered:

It is ORDERED and ADJUDGED that the New Jersey "Worker and Community Right-to-Know Act," N.J.S.A. 34:5A-1, *et seq.*, insofar as said Act is applicable to

employers in the manufacturing sector (SIC Codes 20-39 inclusive), is preempted by the Occupational Safety and Health Act of 1970 ("OSH Act"), 29 U.S.C. §§ 651 *et seq.*, and the Final Rule entitled "Hazard Communication" promulgated by the Occupational Safety and Health Administration on 25 November 1983, 48 Fed. Reg. 53280 *et seq.*, 29 C.F.R. § 1910.1200, and defendant state officials, their successors, agents, employees, attorneys, and all those acting in concert with said defendants, are hereby permanently enjoined from enforcing, directly or indirectly any of the provisions of said New Jersey Act or regulations issued pursuant thereto against the individual plaintiffs or any of the members of the plaintiff associations; provided, however, that nothing herein shall preclude the defendant state officials from submitting such provisions to the Secretary of Labor as part of a State plan pursuant to the provisions of § 18 of the OSH Act, 29 U.S.C. § 667. It is further ORDERED that the claims in Counts II and III of plaintiffs' Complaint, having been rendered moot by this Final Judgment in plaintiffs' favor on the claims asserted in Count I, are therefore dismissed without prejudice.

January 10, 1985

/s/ Dickinson R. Debevoise
DICKINSON R. DEBEVOISE
Clerk of Court
United States District Judge

Dated at Newark, New Jersey this —— day of January, 1985.

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

Civil Action No. 84-3892D, No. 84-3255D

FRAGRANCE MATERIALS ASSOCIATION
OF THE UNITED STATES, *et al.*,
Plaintiffs,

v.

WILLIAM VAN NOTE, *et al.*,
Defendants.

ORDER

[Filed Feb. 25, 1985]

Upon consideration of the motion of the defendant state officials to stay the final judgment of this Court pending appeal, and the Court having concluded that defendants have failed to make a sufficient showing with respect to likelihood of success, harm to the respective parties, and the public interest, it is hereby

ORDERED that the motion to stay the judgment is denied.

/s/ Dickinson R. Debevoise
DICKINSON R. DEBEVOISE
United States District Judge

Dated Feb. 25, 1985

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

March 7, 1985

Nos. 85-5087, 5088, 5095

NEW JERSEY STATE CHAMBER OF COMMERCE, *et al.*

vs.

ROBERT E. HUGHEY, ETC., *et al.*

JOSEPH A. RODRIGUEZ, ETC., *et al.*,
Defendant-Intervenor

(D.C. Civil 84-3255)

FRAGRANCE MATERIALS ASSOCIATION OF THE UNITED STATES, *et al.*

vs.

WILLIAM VAN NOTE, ETC., *et al.*

(D.C. Civil 84-3892)

ROBERT E. HUGHEY, J. RICHARD GOLDSTEIN, M.D. and WILLIAM VAN NOTE,
Appellants, 85-5087

JOSEPH H. RODRIGUEZ, ETC., *et al.*,
Appellants, 85-5088

N.J. STATE CHAMBER OF COMMERCE,
CHEMICAL INDUSTRY COUNCIL OF N.J., *et al.*,
Appellants, 85-5095

Present: GIBBONS and BECKER, *Circuit Judges.*

1. Motion by appellants in No. 85-5087 and appellants in No. 85-5088 for a stay of the district court order (as stated and attached on p. 37 in joint brief in support of motion) and judgment dated January 10, 1985, pending appeals,

and

Motion for an expedited appeal with suggested briefing schedule:

Brief and appendix of appellants, cross appellees 10 days from date of this Court's order;

Brief of appellees, cross appellants 10 days from service of appellants, cross appellees;

Reply briefs, if any, 5 days from service of brief of appellee, cross appellants;

Oral argument four weeks after parties' briefs are filed in the above-entitled cases.

Respectfully,

/s/ Valerie Young
Deputy Clerk 7-3080

enc.
vy

The foregoing Motion for a stay pending appeal is denied. The case will be listed for disp. during the week of June 17, 1985. The Clerk is ordered to fix a briefing schedule accordingly.

By the Court,

/s/ John J. Gibbons
Judge

Dated: March 21, 1985
vy/cc: BDF
JPMcK
SAT
JB
J.J.C Jr.

UNITED STATES COURT OF APPEALS
THIRD CIRCUIT

Nos. 85-5087, 85-5088 and 85-5095

NEW JERSEY STATE CHAMBER OF COMMERCE, CHEMICAL INDUSTRY COUNCIL OF NEW JERSEY, NEW JERSEY BUSINESS AND INDUSTRY ASSOCIATION, CHEMICAL SPECIALTIES MANUFACTURERS ASSOCIATION, INC., MERCK & CO., INC., MAGNESIUM ELEKTRON, INC., CP CHEMICALS, INC., CHEM-MARK, INC., EXXON CHEMICAL AMERICAS, a division of Exxon Chemical Company, a division of Exxon Corporation, SCHERING CORPORATION, ESSEX CHEMICAL CORPORATION, INGERSOLL-RAND COMPANY, and SHELL CHEMICAL COMPANY, a division of Shell Oil Company

v.

ROBERT E. HUGHEY, Commissioner of Environmental Protection; J. RICHARD GOLDSTEIN, M.D., Commissioner of Health, and WILLIAM VAN NOTE, Acting Commissioner of Labor and and The State of New Jersey and AMY PIRO, Acting Public Advocate of the State of New Jersey; NEW JERSEY STATE INDUSTRIAL UNION COUNCIL, AFL-CIO (IUC); CITIZEN ACTION OF NEW JERSEY; PHILADELPHIA AREA PROJECT ON OCCUPATIONAL SAFETY & HEALTH (PHILAPOSH); NEW JERSEY ENVIRONMENTAL LOBBY; NEW JERSEY STATE FIREMEN'S MUTUAL BENEVOLENT ASSOCIATION (FMBA); INTERNATIONAL ASSOCIATION OF FIREFIGHTERS, NEW JERSEY AFL-CIO (IAFF); COMMUNICATION WORKERS OF AMERICA, AFL-CIO (CWA); DISTRICT THREE, INTERNATIONAL UNION OF ELECTRONIC, ELECTRICAL, TECHNICAL, SALARIED AND MACHINE WORKERS, AFL-CIO (IUE); INTERNATIONAL LADIES GARMENT WORKERS' UNION, AFL-CIO (ILGWU); AMALGAMATED CLOTHING AND TEXTILE WORKERS UNION, AFL-CIO, CENTRAL AND SOUTH JERSEY JOINT BOARD (ACTWU); UNITED PAPERWORKERS INTERNATIONAL UNION, AFL-CIO (UPIU); OIL,

CHEMICAL AND ATOMIC WORKERS UNION, AFL-CIO, LOCALS 8-149, 8-760, and 8-5570 (OCAW); UNITED AUTO WORKERS UNION, AFL-CIO, LOCAL 502 (UAW); CHEMICAL WORKERS ASSOCIATION, INC.; INDEPENDENT OIL WORKERS UNION, TRENTON EDUCATION ASSOCIATION; ALUMINUM, BRICK & GLASS WORKERS INTERNATIONAL UNION, AFL-CIO, LOCAL 514-G; PENNSYLVANIA FEDERATION, BROTHERHOOD OF MAINTENANCE OF WAY EMPLOYEES, AFL-CIO; COALITION AGAINST TOXICS; LEAGUE OF CONSERVATION VOTERS (NEW JERSEY); CLEAN WATER ACTION (WASHINGTON, D.C. AND NEW JERSEY); STUDENT PUBLIC INTEREST RESEARCH GROUP OF NEW JERSEY (N.J. PIRG); ENVIRONMENTAL ACTION (WASHINGTON, D.C.); LEAGUE OF WOMEN VOTERS OF NEW JERSEY; SIERRA CLUB (NEW JERSEY); AMERICAN LUNG ASSOCIATION OF NEW JERSEY; NEW JERSEY TENANTS ORGANIZATION (NJTO); NEW JERSEY ASSOCIATION OF COUNTY HEALTH OFFICERS; and NEW JERSEY HEALTH OFFICERS ASSOCIATION,

Defendant-Intervenors,

FRAGRANCE MATERIALS ASSOCIATION OF THE UNITED STATES, FLAVOR AND EXTRACT MANUFACTURER'S ASSOCIATION, BUSH BOAKE ALLEN, INC., DRAGOCO, INC., FIRMENICH, INC., INTERNATIOAL FLAVORS AND FRAGRANCES, INC., ISOGENICS, INC., H.J. KOHNSTAMM & CO., INC., V. MANE FILES, INC., NOVILLE ESSENTIAL OIL COMPANY, INC., POLAROME MANUFACTURING CORP., ROURE BERTRAND DUPONT, INC., TAKASAGO USA INC., UNGERER & CO., and UNIVERSAL FRAGRANCE CORPORATION

v.

WILLIAM VAN NOTE, Acting Commissioner of Labor for State of New Jersey; J. RICHARD GOLDSTEIN, Commissioner of Health for State of New Jersey; ROBERT E. HUGHEY, Commissioner of Environmental Protection for State of New Jersey.

Appeal of Robert E. Hughey, J. Richard Goldstein, M.D., and William Van Note, Appellants in No. 85-5087

Appeal of Amy Piro, Acting Public Advocate of the State of New Jersey, *et al.*, Defendant-Intervenors, Appellants in No. 85-5088

Appeal of New Jersey State Chamber of Commerce, *et al.*, Appellants in No. 85-5095

Argued June 18, 1985

Decided Oct. 10, 1985

Theodore M. Lieverman, Philadelphia, Pa., for amici curiae, The Hon. Mark B. Cohen, et al.

Robert W. Thomson, Debra M. Coulson, Blair S. McMillin, Reed Smith Shaw & McClay, Pittsburgh, Pa., for amici curiae, Manufacturers Ass'n for Tri-County, Appleton Papers, Inc., Ellwood City Forge Corp. and McDanel Refractory Co.

John J. Carlin, Jr. (argued), Lisa Pollak, Martin Cronin, Farrell, Curtis, Carlin & Davidson, Morristown, N.J., for N.J. State Chamber of Commerce, et al.

John P. McKenna (argued), Daniel F. Shea, McKenna & Shea, Washington, D.C., Daniel R. Thompson, Law Offices of Daniel R. Thompson, Washington, D.C., for Fragrance Materials Ass'n, et al.

Paul Bardacke, Atty. Gen., Douglas Meiklejohn, Christopher D. Coppin, Asst. Attys. Gen., Santa Fe, N.M., for amici curiae, the State of N.M. and the New Mexico Environmental Imp. Div.

Irwin I. Kimmelman, Atty. Gen. of N.J., Michael R. Cole, First Asst. Atty. Gen., Michael S. Bokar, Deputy Atty, Gen. (argued), Trenton, N.J., for defendant Robert E. Hughey, Com'r of Environmental Protection, et al.

Amy Piro, Acting Public Advocate of New Jersey, Richard A. Goldberg, Sharon A. Treat, Asst. Deputies Public Advocate, Div. of Public Advocacy, Trenton, N.J., Reitman, Parsonnet, Maisel & Duggan, Sidney Reitman, Bennett D. Zurofsky (argued), Newark, N.J., Public Interest Law Center of Philadalphia, Jerome Balter, Philadelphia, Pa., for Amy Piro, Acting Public Advocate, et al.

Before GIBBONS and BECKER, Circuit Judges, and DIAMOND, District Judge.*

OPINION OF THE COURT

GIBBONS, Circuit Judge:

This is an appeal from a final summary judgment in consolidated actions challenging the constitutionality of the New Jersey Worker and Community Right to Know Act, N.J.Stat.Ann. § 34:5A-1 to -31 (West 1984), which requires the disclosure of substances that may pose environmental hazards. The plaintiffs[1] contend that the statute is preempted in its entirety by the federal Occupational Safety and Health Act of 1970, Pub.L. No. 91-

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* Hon. Gustave Diamond, United States District Judge for the Western District of Pennsylvania, sitting by designation.

[1] The plaintiffs include the New Jersey State Chamber of Commerce, three chemical and business associations, eight pharmaceutical and chemical companies, the Fragrance Materials Association of the United States, the Flavor and Extract Manufacturers' Association, and thirteen corporations which manufacture, compound, mix, or blend fragrances. The original defendants are the New Jersey Commissioners of Environmental Protection, Health, and Labor, and the State. The New Jersey Public Advocate and twenty-nine labor unions and environmental organizations are intervening defendants.

596, 84 Stat. 1590 (1970), *codified at*, 29 U.S.C. §§ 651-678 (1982) (OSH Act), and that the disclosure requirements are an unreasonable exercise of the state's police power which will result in a taking of trade secrets without due process. The district court, 600 F.Supp. 606 (D.N.J.1985), held that the Right to Know Act, as applied to workers in the manufacturing sector,[2] is preempted by the OSH Act and OSHA's Hazard Communication Standard, 29 C.F.R. § 1900.1200 (1984). The district court further held that the provisions of the Right to Know Act that apply to employers outside the manufacturing sector are unseverable. The court therefore permanently enjoined enforcement of the Act against employers in the manufacturing sector until the state submits a plan to the Secretary of Labor, pursuant to 29 U.S.C. § 667(b), and obtains his approval of the state enforcement plan. The court also entered a declaratory judgment that the Act is not a taking of trade secrets without due process, and is not preempted as applied to employers not in the manufacturing sector. All parties appeal. Since we review a summary judgment our review is plenary. We affirm in part and reverse in part.

I.

The Right to Know Act

The legislative findings and declaration of purpose are included in the statute, which provides in relevant part:

> [T]he proliferation of hazardous substances in the environment poses a growing threat to the public

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[2] The Hazard Commuication Standard regulates employers who are "engaged in a business within SIC [Standard Industrial Classification] Codes 20-39 where chemicals are either used, or are produced for use or distribution." 29 C.F.R. § 1910.1200(c) (1984). SIC Codes 20-39 correspond to the manufacturing sector of the economy For purposes of this opinion, "manufacturing sector" shall be considered synonymous with SIC Codes 20-39.

> health . . . [and] individuals have an inherent right to know the full range of risks they face so that they can make reasoned decisions and take informed action concerning their employment and their living conditions.
>
> . . . [L]ocal health, fire, police, safety and other government officials require detained [sic] information about the identity . . . of hazardous substances . . . in order to adequately plan for, and respond to, emergencies. . . .
>
> . . . [T]he toxic contamination of the air, water, and land in this State has caused a high degree of concern among its residents . . . [which is] needlessly aggravated by the unfamiliarity of these substances to residents.
>
> The Legislature therefore determines that it is in the public interest to establish a comprehensive program for the disclosure of information about hazardous substances in the workplace and the community, and to provide a procedure whereby residents of this State may gain access to this information.

N.J.Stat.Ann. § 34:5A-2 (West 1984). Thus the New Jersey Legislature intended the Right to Know Act to make information about toxic chemicals available, (1) to all New Jersey residents who might be exposed to such chemicals, in the workplace or elsewhere, and (2) to public safety officers who might need such information to prevent, or respond to, emergencies.

The Right to Know Act directs the New Jersey Department of Environmental Protection (DEP) to develop an environmental hazardous substance list, which must contain:

> substances used, manufactured, stored, packaged, repackaged, or disposed of or released into the en-

> vironment of the State which, in the department's determination, may be linked to the incidence of cancer; genetic mutations; physiological malfunctions, including malfunctions in reproduction; and other diseases; or which, by virtue of their physical properties, may pose a threat to the public health and safety.

N.J.Stat.Ann. § 34:5A-4(a). The DEP promulgated such a list pursuant to the Act. N.J.Admin.Code tit. 7, § 1G-2.1 (1984). DEP is further directed to develop an environmental survey "designed to enable employers to report information about environmental hazardous substances at their facilities." N.J.Stat.Ann. § 34:5A-4(b).

A separate section of the Act directs the Department of Health to develop a workplace hazardous substance list which must include: (1) all substances regulated by the Occupational Safety and Health Administration (OSHA) under 29 C.F.R. § 1910, subpart z; (2) all environmental hazardous substances; and (3) all substances that "pose[] a threat to the health or safety of an employee." N.J.Stat.Ann. § 34:5A-5(a). The workplace hazardous substance list, therefore, by definition includes all substances on the environmental hazardous substance list, and may include some additional substances. The list as promulgated is codified at N.J. Admin.Code, tit. 8, § 59 App. A (1984). The Department of Health must develop a "hazardous substance fact sheet" for every item on the workplace hazardous substance list. N.J.Stat.Ann § 34:5A-5(d). The Department of Health is further directed to designate a "special health hazard substance list" indicating those substances that are so dangerous that employers will not be permitted to make a trade secret claim as to them. N.J. Stat.Ann. § 34:5A-5(b). Finally, the Department of Health is directed to develop a workplace survey to facilitate reporting of workplace hazardous substances by employers. N.J.Stat.Ann. § 34:5A-5(c).

Employerc must provide completed surveys to county health departments, local fire and police departments, and to the Department of Health (workplace surveys) or the DEP (environmental surveys). N.J.Stat.Ann. § 34:5A-7. Upon receipt of an employer's completed workplace survey, the Department of Health must provide the employer with a hazardous substance fact sheet (prepared by the Department, pursuant to section 5(d) of the Act) for each hazardous substance reported by that employer. N.J.Stat.Ann. § 34:5A-8(a). The Department of Health must keep the workplace surveys on file, and make them available to any person who submits a written request. N.J.Stat.Ann. § 34:5A-10. Likewise, DEP must maintain a current file of environmental surveys and make them available to any person who makes a written request. N.J.Stat.Ann. § 34:5A-9. The Act provides that "any person" may obtain access to environmental and workplace surveys; this information is not limited to employees.

Several sections of the Act are designed to ensure that information about hazardous substances is communicated to employees in particular. Employers must maintain a central file of workplace and environmental surveys, and notify employees of the file's availability. N.J.Stat.Ann. § 34:5A-12. Each employer must also implement an employee education and training program designed to inform employees of the risk of hazardous chemicals, and to train them in precautions for safe handling of hazardous substances in the workplace. N.J.Stat.Ann. § 34:5A-13. The Act also requires employers to label containers of hazardous substances. N.J. Stat.Ann. § 34:5A-14.

The Act allows employers to assert a trade secret claim against disclosure of confidential information "which is not patterned, which is known only to an employer and certain other individuals, and which is used in the fabrication and production of an article of trade

or service, and which gives the employer possessing it a competitive advantage over businesses who do not possess it. . . ." N.J.Stat.Ann. §§ 34.5A-3, 34:5A-15. Employers may not, however, refuse to disclose information about substances that are on the "special health hazard substance list." N.J.Stat.Ann. § 34:5A-5(b).

II.

Preemption

Whether a state law is preempted by a federal statute is a question of congressional intent. Preemption may be found if, on the face of the federal statute, Congress expressly stated an intent to preempt a state law. *Fidelity Federal Savings and Loan Association v. de la Cuesta*, 458 U.S. 141, 152-53, 102 S.Ct. 3014, 3022-23, 73 L.Ed.2d 664 (1982). Even if there is no such express preemption, an intent to preempt state law will be implied if: (1) it is impossible to comply with both the state and the federal law, or (2) "the state law stands as an obstacle to the accomplishment of the full purposes and objectives of Congress." *Silkwood v. Kehh-McGee Corporation*, 464 U.S. 238, 248, 104 S.Ct. 615, 621, 78 L.Ed.2d 443 (1984). Administrative regulations promulgated pursuant to congressional authorization have the same preemptive effect as federal statutes. *Fidelity Federal*, 458 U.S. at 153-54, 102 S.Ct. at 3022-23.

A. Express Preemption

The Chamber of Commerce and the Fragrance Materials Association contend that the entire Right to Know Act is expressly preempted by the Occupational Safety and Health Act of 1970 (OSH Act), 29 U.S.C. §§ 651-678 (1982), and by the Hazard Communication Standard, 29 C.F.R. § 1900.1200 (1984), promulgated pursuant to the OSH Act. Our decision in *United Steelworkers of America v. Auchter*, 763 F.2d 728, 738 (3d Cir.1985),

compels a holding that the OSH Act and the Hazard Communication Standard preempt the Right to Know Act "with respect to disclosure to employees in the manufacturing sector." *Id.* at 736. We are left with the question not resolved by *Steelworkers*: to what extent are the other provisions of the New Jersey Right to Know Act preempted by the Hazard Communication Sandard?

As we held in *Steelworkers*, section 18 of the OSH Act expressly preempts state law pertaining to issues that are addressed by OSHA standards unless a state plan has been approved by the Secretary. 763 F.2d at 733-34. Section 18(a) of the OSH Act expressly gives the states authority to regulate matters that are not governed by a standard.

> Nothing in this chapter shall prevent any State agency or court from asserting jurisdiction under State law over any occupational safety or health issue with respect to which no standard is in effect. . . .

29 U.S.C. § 667(a). The statute provides that states may develop and enforce "standards relating to any occupational safety or health issue with respect to which a Federal standard has been promulgated" if the state submits a plan to OSHA, and OSHA approves that plan. 29 U.S.C. § 667(b).

The Fragrance Materials Association contends that these provisions should be read expansively to preempt expressly all state statutes that "relate to" a safety or health issue for which a standard has been promulgated. Br. at 10-22. The Assoication further contends that all provisions of the Right to Know Act relate to issues that are regulated by the Hazard Communication Standard, and that the New Jersey statute is thus preempted in its entirety.

We reject this broad reading of the preemptive effect of OSHA standards. The Frangrance Materials Association cites a number of cases in support of its contention that Congress' language in the OSH Act "evidences a sweeping preemptive intent." Br. at 11. The cases cited,[3] however, all involve interpretations of the preemption language of the Employee Retirement Income Security Act of 1974 (ERISA), 29 U.S.C. §§ 1001-1461 (1982), which is much more explicit than the language of the OSH Act. (The ERISA provisions "shall supersede any and all State laws insofar as they may now or hereafter relate to any employee benefit plan. . . ." 29 U.S.C. § 1144(a)).

The preemption language of the OSH Act must be read with the overall purpose of the Act "to assure so far as possible every working man and woman in the Nation safe and healthful working conditions. . . ." 29 U.S.C. § 651 (b). In light of this purpose and the plain language of section 18 of the OSH Act, it seems clear that the state laws are expressly preempted only to the extent that a federal standard regulating the same issue is already in effect. It would thwart the overriding congressional intent to promote worker safety if federal standards preempted state laws governing issues that are not federally regulated.

Because OSHA standards by definition govern occupational safety and health issues, they do not preempt state laws that regulate other concerns. The Secretary has authority to promulgate standards only as to occupational safety and health and those standards cannot have

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[3] *Shaw v. Delta Air Lines, Inc.*, 463 U.S. 85, 103 S.Ct. 2890, 2899-2900, 77 L.Ed.2d 490 (1983); *American Progressive Life and Health Insurance Co. v. Corcoran*, 715 F.2d 784, 786 (2d Cir. 1983); *Buczynski v. General Motors Corp.*, 616 F.2d 1238, 1250 (3d Cir. 1980), *aff'd Alessi v. Raybestos-Manhattan, Inc.*, 451 U.S. 504, 522-25, 101 S.Ct. 1895, 1905-07, 68 L.Ed.2d 402 (1981); *California Chamber of Commerce v. Simpson*, 601 F.Supp. 104, 107-09 (C.D. Cal. 1985).

a preemptive effect beyond that field. Indeed the Secretary argued in *Steelworkers* that the Hazard Communication Standard should not preempt state laws addressing "general environmental problems originating in the workplace, but whose effects are outside it. . . ." Secretary's Br. at 88, *Steelworkers*. The contention of the various New Jersey business interests that Congress intended the OSH Act to preempt all the environmental protection provisions of the New Jersey law is unpersuasive. We hold that the New Jersey Right to Know Act is expressly preempted by the OSH Act and the Hazard Communication Standard only insofar as the New Jersey Act pertains to protection of employee health and safety in the manufacturing sector.

B. Implied Preemption

Other portions of the New Jersey Act might still be preempted, however, under the doctrine of implied preemption, if it is impossible to comply with both the New Jersey law and the Hazard Communication Standard, or if enforcement of the New Jersey Act will thwart congressional purpose. It should be noted from the outset that the mere fact that a state law provision increases the regulatory burden on employers does not make the state law provision contrary to congressional intent. Although OSHA declared that the federal Hazard Communication Standard was designed "to reduce the regulatory burden posed by multiple state laws," 48 Fed.Reg. 53284, the legislative history of the OSH Act does not indicate that Congress was significantly concerned with reducing the regulatory burden. *See Steelworkers*, 763 F.2d at 734.

Each section of the Right to Know Act must be examined to determine whether it must be held to be preempted by federal law. We may hold a section preempted only if it is clear that Congress would have intended to preempt such a provision. *See Commonwealth Edison Co. v. Montana*, 453 U.S. 609, 634, 101 S.Ct. 2946, 2962, 69 L.Ed.2d 884 (1981). As this court recently noted:

> Preemption must either be explicit, or compelled due to an unavoidable conflict between the state law and the federal law. Consideration of whether a state provision violates the supremacy clause starts with the basic assumption that Congress did not intend to displace state law.

Penn Terra Ltd. v. Department of Environmental Resources, 733 F.2d 267, 272-73 (3d Cir.1984) (citations omitted). A section should be held to be preempted, therefore, only to the extent that: 1) it is expressly preempted because it regulates communication of hazards to employees in the manufacturing sector; 2) it is impossible to comply both with state law and with federal law; or 3) the provision serves as an obstacle to the accomplishment of Congress' object in the OSH Act to promote safe and healthful working conditions.

C. Preemption of the Right to Know Act

Applying these legal standards for preemption, we have examined each section of the Right to Know Act. Listed in the margin are those sections which in our view unquestionably present no issue of express or implied preemption.[4] We will discuss only those sections as to

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[4]

34:5A-1	Title
34:5A-2	Legislative findings and declarations
34:5A-3	Definitions
34:5A-4(c)	Spanish translation
34:5A-4(d)	Deadlines
34:5A-5(d)	Department of Health must develop hazardous substance fact sheets
34:5A-5(e)	Spanish translation
34:5A-5(f)	Deadlines
34:5A-6	Distribution of workplace and environmental hazard surveys to employers
34:5A-7(b)	Completion and distribution of environmental hazardous substance surveys

[Continued]

which some plausible preemption contention may be made.

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[4] [Continued]

34:5A-8(a)	Department of Health must provide each employer with a fact sheet for each hazardous substance reported
34:5A-8(b)	Employers exempt from Act
34:5A-9	DEP must maintain file of environmental surveys; may require employers to update or clarify surveys; surveys will be made available to the public
34:5A-11	Spanish translation
34:5A-14(c)	Department of Health may certify containers labeled in compilance with any federal act as complying with 34:5A-14
34:5A-14(d)	Substances for which chemical name need not be included on label
34:5A-15	Trade secret claims
34:5A-17	Employees may not be discharged or penalized for exercising rights under the Act
34:5A-18 to 20	Establishment, powers and duties of Right to Know Advisory Council
34:5A-21	Implementation of Act
34:5A-22	County health departments must maintain files of workplace and environmental surveys and make them available to the public
34:5A-23	Civil actions for violations of Act
34:5A-24	Absence of substance from lists does not affect employer's duty to warn, or take other precautions
34:5A-25	Role of fire and police departments
34:5A-27	State law preempts municipal and county ordinances passed after May 11, 1983
34:5A-28	State agencies will evaluate Act in two years and present report to legislature
34:5A-29	Agencies may enter employer's facilities to assure compliance
34:5A-30	Agencies may adopt necessary rules and regulations
34:5A-31	Remedies for failure to comply

1. State Hazardous Substance Lists

Sections 34:5A-4(a) and (5)(a) direct the New Jersey DEP and Department of Health to develop environmental and workplace hazardous substance lists. Sections 34:5A-4(b) and 5(c) direct those departments to develop environmental and workplace hazard surveys for employers to report hazardous substances. Section 34:5A-5(d) requires the Department of Health to develop hazardous substance fact sheets for each hazardous substance. In these provisions, New Jersey has opted for a different hazard identification procedure than that adopted in the federal Hazard Communication Standard, which depends primarily upon identification of hazards by the original manufacturer or importer of the substance. 29 C.F.R. § 1910.1200(d). *See Steelworkers*, 763 F.2d at 732. New Jersey's undertaking to develop its own list of hazardous substances through governmental agencies, and to make surveys of environmental and workplace hazards in all sectors of the economy, will in no way inhibit the implementation of the federal standard. The federal and state lists may comfortably coexist. Thus sections 34:5A-4 and 34:5A-5 are not preempted.

2. Employer Completion of Workplace and Environmental Surveys

Section 34:5A-7(a) requires employers to complete workplace hazard surveys and to provide the completed surveys to the State Department of Health, the County Department of Health, and local fire and police departments. Section 34:5A-7(b) imposes parallel requirements for completion and distribution of environmental hazard surveys. Section 34:5A-7(b) is not preempted, since it requires reporting of environmental hazards to agencies concerned with public health and safety, a matter not governed by OSHA standards. Section 34:5A-7(a) is not preempted in areas of the economy other than the manufacturing sector, so long as no federal standard is in effect in those areas.

Section 34:5A-7(a) is preempted in the manufacturing sector, SIC Codes 20-39. The requirement that workplace surveys be furnished not only to state agencies concerned with the protection of employees, but also to state and local agencies concerned with the protection of the public at large suggests that section 34:5A-7(a) may have a broader purpose than the federal Hazard Communication Standard. Nevertheless any hazardous substance listed as a workplace hazard pursuant to section 34:5A-5(a), and not listed as an environmental hazard pursuant to section 34:5A-4(a), is deemed to be one posing a specific threat to workers. It appears therefore that the primary purpose of section 34:5A-7(a) is the promotion of occupational health and safety through hazard communication. The federal Hazard Communication Standard expressly preempts section 34:5A-7(a) in the manufacturing sector. Because section 34:5A-7(a) may not operate in the manufacturing sector, the provision in section 34:5A-10 directing the Department of Health to maintain a file of workplace surveys is preempted to the same extent. Moreover, the obligation of employers in the manufacturing sector to keep a central file of workplace surveys, imposed in section 34:5A-12, is also preempted. Likewise, section 34:5A-16 is preempted to the extent that it guarantees employees in the manufacturing sector access to workplace surveys and hazardous substance fact sheets for items on the workplace hazardous substance list. Employers in the manufacturing sector must, however, pursuant to section 34:5-A-12, keep and make available the environmental surveys required by section 34:5A-7(b). This provision of the Act is not preempted.

3. Funding

Section 34:5A-26 provides that the Right to Know Act will be funded by assessments against all New Jersey employers. The Fragrance Materials Association argues that this indicates that the Act is aimed solely at oc-

cupational safety and health, rather than at community health and safety in general, and thus that all provisions of the Act should be preempted by the OSH Act. Br. at 18. That contention is without merit. The Act discloses a broad community health and safety purpose. The funding provision is a logical means for funding the accomplishment of that purpose. It does not interfere with compliance with the OSH Act or impose obstacles to the accomplishment of the OSH Act's purposes.

4. Container Labeling

Section 34:5A-14 requires New Jersey employers to label containers of hazardous substances with the chemical name and Chemical Abstracts Service number. The federal Hazard Communication Standard requires chemical manufacturers and importers to label each container leaving the workplace with the identity of the hazardous chemical, which may be indicated by either a chemical or a common name. 29 C.F.R. § 1910.1200(f), (d). The labeling requirements of the federal Hazard Communication Standard expressly preempt section 34:5A-14 to the extent that they require labeling of workplace hazards in the manufacturing sector. Section 34:5A-14 continues to operate, however, outside SIC Codes 20-39.

The Hazard Communication Standard does not expressly preempt section 34:5A-14 to the extent that it requires that containers of environmental hazardous substances be labeled. Plaintiffs contend that the labeling provisions of the New Jersey Act are impliedly preempted because they are an obstacle to the accomplishment of congressional purpose in the OSH Act. Section 34:5A-14 requires that within two years containers and pipelines be labeled with chemical names and Chemical Abstracts Service Registry numbers of the five predominant substances passing through them. The plaintiffs contend that compliance with these labeling requirements, which are intended to furnish information to firefighters, police officers, and

members of the community at large, will, if imposed on employers in the manufacturing sector, stand as an obstacle to the accomplishment of the purposes of the federal Hazard Communication Standard. Their theory, set forth in several affidavits filed in support of their motion for summary judgment, is that the environmental hazard labeling, in conflicting with the labeling required by the federal standard, will lead to confusion of workers. The district court, because it determined that the preempted provisions of the Act were unseverable, did not decide whether the plaintiffs were entitled to a summary judgment that the environmental hazard labeling features of the Right to Know Act were impliedly preempted by the federal Hazard Communication Standard. Our examination of the summary judgment record suggests that there are disputed issues of material fact which preclude a summary judgment for the plaintiffs or the defendants on that issue. If New Jersey's imposition of the environmental hazard requirements in the manufacturing sector, not for the purpose of protecting workers, but in the interest of firefighters, police officers, and the general public, does in fact stand as an obstacle to the accomplishment of the purposes of the federal standard, the New Jersey law must yield. Otherwise it may operate. On this record we cannot determine that question as a matter of law.

D. Severability

If any provisions of the Right to Know Act are preempted by the OSH Act, we must look to New Jersey law to determine whether the preempted provisions may be severed from the rest, or whether the statute as a whole must fall. *See Watson v. Buck*, 313 U.S. 387, 395-96, 61 S.Ct. 962, 964-65, 85 L.Ed. 1416 (1941) (severability is a question of state law). Under New Jersey law, severability is a question of legislative intent. The New Jersey legislature has spoken with respect to severability of statutes in general terms:

> If any title, subtitle, chapter, article or section of the Revised Statutes, or any provision thereof, shall be declared to be unconstitutional, invalid or inoperative, in whole or in part, by a court of competent jurisdiction, such title, subtitle, chapter, article, section or provision shall, to the extent that it is not unconstitutional, invalid or inoperative, be enforced and effectuated, and no such determination shall be deemed to invalidate or make ineffectual the remaining titles, subtitles, chapters, articles, sections or provisions.

N.J.Stat.Ann. § 1:1-10 (West 1984). Section 1:1-10 creates a presumption of severability, although it does not mandate a holding of severability if that is not in keeping with legislative intent. *Rutgers Chapter of Delta Upsilon Fraternity v. City of New Brunswick*, 129 N.J.L. 238, 245, 28 A.2d 759, 763 (N.J.Sup.Ct. 1942), *aff'd*, 130 N.J.L. 216, 32 A.2d 364 (N.J. 1943).

The New Jersey case law on severability focuses on the overriding purpose of the statute to determine whether excising the invalid provision would promote legislative intent. Most of the reported New Jersey cases holding that a challenged provision may not be severed from the whole, do so on the ground that, without the challenged provision, the remaining portions of the statute will no longer further the legislature's intent. An interesting pattern emerges in these cases: in each, the court struck down an exception to a broader statutory rule, and held that, without the exception, the general rule was contrary to legislative intent. Thus, in *Affiliated Distillers Brands Corp. v. Sills*, 289 A.2d 257, 258-50, 60 N.J. 342, 345 (1972), when the court struck down a grandfather clause that protected about one third of all liquor wholesalers from a statute forbidding them also to engage in distilling, the court held that the grandfather clause could not be severed from the statute. *See also New Jersey Chapter, American Institute of Planners v. New Jer-*

sey State Board of Professional Planners, 227 A.2d 313, 319, 48 N.J. 581, 593 (1967) (statute provides that planners must be licensed, but licensed engineers, surveyors, and architects are exempted from the requirement; held: exemption cannot be severed from statute); *Delta Upsilon*, 28 A.2d at 762-63 (statute exempts property of fraternal organizations from taxation, but specifically excludes college fraternities from the definition; held: exception for college fraternities cannot be severed without frustrating legislative intent to make tax exemption narrow). In each of these cases the court was faced with a choice: it could strike down the statute in its entirety, or it could sever the exception and broaden the statute's reach by enforcing the statute without the exception. In each case the court decided to strike down the entire statute rather than risk imposing a regulation broader than the legislature intended.

In other cases, however, where one aspect of a broad regulatory scheme is struck down, the New Jersey courts are likely to hold that legislative intent is better served by severing the invalid provision, which will result in a slightly less comprehensive regulation, than by striking down the entire statute, which would result in no regulation at all. *See State v. Lanza*, 27 N.J. 516, 527, 143 A.2d 571, 577 (1958) (*dictum*) (portion of statute providing that state will compensate municipalities for tax revenues lost as a result of creation of reservoir, if unconstitutional, is severable from statute authorizing creation of water supply system), *appeal dismissed*, 358 U.S. 333, 79 S.Ct. 351, 3 L.Ed.2d 350 (1959); *Oxford Consumer Discount Co. v. Stefanelli*, 102 N.J.Super. 549, 561, 246 A.2d 460, 467 (App.Div.1968) (unconstitutional residence requirement of Secondary Mortgage Loan Act is severable from other portions of regulatory scheme), *aff'd as modified on other grounds*, 55 N.J. 489, 262 A.2d 874, *appeal dismissed*, 400 U.S. 808, 91 S.Ct. 45, 27 L.Ed.2d 38, *order amended*, 400 U.S. 923, 91 S.Ct. 183,

27 L.Ed.2d 182 (1970). In such cases, "[w]here the principal object of the statute is constitutional, and the objectionable provision can be excised without substantial impairment of the general purpose, the statute is operative except insofar as it may contravene fundamental law." *State v. Lanza*, 27 N.J. 516, 527, 143 A.2d 571, 577 (N.J.Sup.Ct.1958).

Legislative intent as to severability may also be gleaned from the structure of the statute. In *State v. Lanza*, the court declared that an invalid provision should be deemed severable from a valid one "unless the two are so intimately connected and mutually dependent as reasonably to sustain the hypothesis that the Legislature would not have adopted the one without the other." 143 A.2d at 577. This is largely a question of whether the statute will continue to make sense after the challenged portion is excised. A regulatory statute may be permitted to stand if, "stripped of those provisions which are invalid, [it] remains a comprehensive and cohesive regulatory ordinance with appropriate sanctions for its enforcement." *Oxford Consumer Discount Co. v. Stefanelli*, 246 A.2d at 467 (quoting *Cranberry Lake Quarry Co. v. Johnson*, 95 N.J.Super. 495, 517, 231 A.2d 837, 848 (App. Div.), *cert. denied*, 50 N.J. 300, 234 A.2d 407 (1967)). In sum, the New Jersey courts use a commonsense approach to severability, holding that an invalid provision is severable if that is in keeping with legislative intent; legislative intent is ascertained by looking to the broad purpose of the statute, the degree to which the valid and invalid provisions are intertwined with one another, and the extent to which the statute remains comprehensive and logical after the invalid provisions are excised.

The intention of the New Jersey legislature will be best advanced by severing preempted portions of the Right to Know Act and leaving the remainder operative. The legislature's intent to protect all New Jersey residents by informing them of hazardous substances is

manifest. *See* N.J.Stat.Ann. § 34:5A-2. Removal of the preempted provisions makes the New Jersey Act somewhat less comprehensive; it does not, however, make any drastic changes that would appear to be contrary to legislative purpose, and it does not broaden the scope of the regulatory scheme by eliminating exceptions to the regulation. The preemptive effect of the OSH Act and the Hazard Communication Standard is narrow. The Right to Know Act remains a "comprehensive and cohesive regulatory ordinance with appropriate sanctions for its enforcement," *Oxford*, 246 A.2d at 467, which should be enforced to further the intent of the New Jersey legislature. The district court erred, therefore, in ruling that as applied to the manufacturing sector the entire Right to Know Act is preempted.

III.

The Trade Secret Contention

The district court held that the provisions of the Right to Know Act requiring disclosure of some trade secret information, N.J.Stat.Ann. § 34:5A-5(b), and providing limited protection to other trade secret information, N.J.Stat.Ann. § 34:5A-15, are neither preempted nor do they constitute a taking without due process. Those holdings are consistent with and indeed required by *Ruckelshaus v. Monsanto Co.*, —— U.S. ——, 104 S.Ct. 2862, 81 L.Ed.2d 815 (1984), and *Westinghouse Electric Corp. v. United States Nuclear Regulatory Commission*, 555 F.2d 82, 95 (3d Cir.1977).

IV.

Conclusion

The district court correctly held that the specific sections of the Right to Know Act directed to the identification and disclosure of workplace hazardous substances, as distinct from environmental hazardous substances, are

preempted in the manufacturing sector by the federal Hazard Communication Standard. The injunction against the enforcement in the manufacturing sector of section 34:5A-7(a) and the other sections directly related to it must therefore be affirmed. The Right to Know Act is not preempted insofar as it regulates employers outside the manufacturing sector, or insofar as it requires identification and reporting of environmental hazard. The preempted provisions may be severed from those that are valid. Summary judgment on preemption grounds with respect to the operation of the environmental hazard labeling requirements of section 34:5A-14 is not appropriate because there are material fact issues as to their effect on the accomplishment of the purposes of the federal standard. The court properly granted summary judgment on the trade secret claim. The judgment appealed from will therefore be affirmed in part, reversed in part, and the case remanded for proceedings consistent with this opinion.

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

Nos. 85-5087, 85-5088 and 85-5095

NEW JERSEY STATE CHAMBER OF COMMERCE, CHEMICAL INDUSTRY COUNCIL OF NEW JERSEY, NEW JERSEY BUSINESS AND INDUSTRY ASSOCIATION, CHEMICAL SPECIALTIES MAUFACTURERS ASSOCIATION, INC., MERCK & CO., INC., MAGNESIUM ELECKTRON, INC., CP CHEMICALS, INC., CHEM-MARK, INC., EXXON CHEMICAL AMERICAS, a division of Exxon Chemical Company, a division of Exxon Corporation, SCHERING CORPORATION, ESSEX CHEMICAL CORPORATION, INGERSOLL-RAND COMPANY, and SHELL CHEMICAL COMPANY, a division of Shell Oil Company

v.

ROBERT E. HUGHEY, Commissioner of Environmental Protection; J. RICHARD GOLDSTEIN, M.D., Commissioner of Health, and WILLIAM VAN NOTE, Acting Commissioner of Labor and The State of New Jersey

and

AMY PIRO, Acting Public Advocate of the State of New Jersey; NEW JERSEY STATE INDUSTRIAL UNION COUNCIL, AFL-CIO (IUC); CITIZEN ACTION OF NEW JERSEY; PHILADELPHIA AREA PROJECT ON OCCUPATIONAL SAFETY & HEALTH (PHILAPOSH); NEW JERSEY ENVIRONMENTAL LOBBY; NEW JERSEY STATE FIREMEN'S MUTUAL BENEVOLENT ASSOCIATION (FMBA); INTERNATIONAL ASSOCIATION OF FIREFIGHTERS, NEW JERSEY AFL-CIO (IAFF); COMMUNICATION WORKERS OF AMERICA, AFL-CIO (CWA); DISTRICT THREE, INTERNATIONAL UNION OF ELECTRONIC, ELECTRICAL, TECH-

NICAL, SALARIED AND MACHINE WORKERS, AFL-CIO (IUE); INTERNATIONAL LADIES' GARMENT WORKERS' UNION, AFL-CIO (ILGWU); AMALGAMATED CLOTHING AND TEXTILE WORKERS UNION, AFL-CIO, CENTRAL AND SOUTH JERSEY JOINT BOARD (ACTWU); UNITED PAPERWORKERS INTERNATIONAL UNION, AFL-CIO (UPIU); OIL, CHEMICAL AND ATOMIC WORKERS UNION, AFL-CIO, LOCALS 8-149, 8-760, and 8-5570 (OCAW); UNITED AUTO WORKERS UNION, AFL-CIO, LOCAL 502 (UAW); CHEMICAL WORKERS ASSOCIATION, INC.; INDEPENDENT OIL WORKERS UNION; TRENTON EDUCATION ASSOCIATION; ALUMINUM, BRICK & GLASS WORKERS INTERNATIONAL UNION, AFL-CIO, LOCAL 514-G; PENNSYLVANIA FEDERATION, BROTHERHOOD OF MAINTENANCE OF WAY EMPLOYEES, AFL-CIO; COALITION AGAINST TOXICS; LEAGUE OF CONSERVATION VOTERS (New Jersey); CLEAN WATER ACTION (Washington, D.C. and New Jersey); STUDENT PUBLIC INTEREST RESEARCH GROUP OF NEW JERSEY (N.J. PIRG); ENVIRONMENTAL ACTION (Washington, D.C.); LEAGUE OF WOMEN VOTERS OF NEW JERSEY; SIERRA CLUB (New Jersey); AMERICAN LUNG ASSOCIATION OF NEW JERSEY; NEW JERSEY TENANTS ORGANIZATION (NJTO); NEW JERSEY ASSOCIATION OF COUNTY HEALTH OFFICERS; and NEW JERSEY HEALTH OFFICERS ASSOCIATION,

Defendant-Intervenors

(D.C. Civil 84-3255)

FRAGRANCE MATERIALS ASSOCIATION OF THE UNITED STATES, FLAVOR AND EXTRACT MANUFACTURER'S ASSOCIATION, BUSH BOAKE ALLEN, INC., DRAGOCO, INC., FIRMENICH, INC., INTERNATIONAL FLAVORS AND FRAGRANCES, INC., ISOGENICS, INC., H.J. KOHNSTAMM & CO., INC., V. MANE FILES, INC., NOVILLE ESSENTIAL OIL COMPANY, INC., POLAROME MANUFACTURING CORP., ROURE BERTRAND DUPONT, INC., TAKASAGO USA INC.,

UNGERER & CO., and UNIVERSAL FRAGRANCE CORPORATION

v.

WILLIAM VAN NOTE, Acting Commissioner of Labor for State of New Jersey; J. RICHARD GOLDSTEIN, Commissioner of Health for State of New Jersey; ROBERT E. HUGHEY, Commissioner of Environmental Protection for State of New Jersey

(D.C. Civil 84-3892)

ROBERT E. HUGHEY, J. RICHARD GOLDSTEIN, M.D., and WILLIAM VAN NOTE,
Appellants in No. 85-5087

AMY PIRO, Acting Public Advocate of the State of New Jersey, *et al.*,
Defendant-Intervenors
Appellants in No. 85-5088

NEW JERSEY STATE CHAMBER OF COMMERCE, *et al.*,
Appellants in No. 85-5095

(D.C. Civil Nos. 84-3255, 84-3892 and 84-3892-D)

On Appeal from the United States District Court for the District of New Jersey—Newark

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Present: GIBBONS and BECKER, *Circuit Judges* and DIAMOND, *District Judge**

JUDGMENT

This cause came on to be heard on the record from the United States District Court for the District of New Jersey and was argued by counsel June 18, 1985.

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* Hon. Gustave Diamond, United States District Judge for the Western District of Pennsylvania, sitting by designation.

On consideration whereof, it is now here ordered and adjudged by this Court that the judgment of the said District Court, entered January 11, 1985, be, and the same is hereby affirmed in part, reversed in part and the cause remanded to the said District Court for further proceedings consistent with the opinion of this Court.

ATTEST:

/s/ SALLY MRVOS
Clerk

October 10, 1985.

Certified as a true copy and issued in lieu of a formal mandate on November 1, 1985.

Test: /s/ M. Elizabeth Ferguson
Chief Deputy Clerk
United States Court of Appeals

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

Civil No. 84-3892

FRAGRANCE MATERIALS ASSOCIATION OF THE UNITED STATES, *et al.*,
Plaintiffs,

-vs-

WILLIAM VAN NOTE, *et al.*,
Defendants.

Newark, New Jersey
Before: March 10, 1986

THE HONORABLE DICKINSON R. DEBEVOISE, U.S.D.J.

Appearances:

FARRELL, CURTIS, CARLIN & DAVIDSON, ESQS.,
By: JOHN J. CARLIN, JR., ESQ.,
For New Jersey State Chamber of Commerce.

MCKENNA & SHEA, ESQS.,
By: JOHN P. MCKENNA, ESQ.,
For Fragrance and Flavor Plaintiffs.

FRANK C. AZZINARO, ESQ.,

and

DANIEL R. THOMPSON, ESQ.,
For Fragrance Materials Association.

ALFRED A. SLOCUM, Public Advocate
By: RICHARD A. GOLDBERG and
EDWARD H. TETELMAN,
Assistant Deputies Public Advocate
For Defendant Intervenors.

Plaintiffs New Jersey State Chamber of Commerce and Fragrance Materials Association of the United States bring a motion for determination of whether the New Jersey Worker and Community Right to Know Act, N.J.S.A. 34:5A-1 et seq. requires workplace labeling of substances on the environmental hazardous substance list and universal workplace labeling. Defendant-Intervenors New Jersey's Public Advocate and Attorney General; the Public Interest Law Center of Philadelphia; and Reitman, Parsonnet, Maisel & Duggan oppose the motion.

Prior Proceedings

The New Jersey legislature passed the Right to Know Law in 1983 pursuant to its power to protect the public health. The Act was designed to make available information about toxic chemicals to workers and community residents exposed to pollution originating in workplaces as well as provide information to those responsible for and concerned with public health and safety including police fire fighters, local health departments, physicians, hospital emergency room directors, and epidemiologists.

Faced with a preemption challenge pursuant to the OSH Act, 29 U.S.C. Sections 651-678 and OSHA's Hazard Communication Standard, 29 C.F.R. Section 1900.-1200, the Third Circuit Court of Appeals held that:

> "The contention of the various New Jersey business interests that Congress intended the OSH Act to preempt all the environmental protections of the New Jersey law is unpersuasive. We hold that the New Jersey Right to Know Act is expressly preempted by the OSH Act and the Hazard Communication Standard insofar as the New Jersey Act pertains to protecting employee health and safety in the manufacturing sector."

N.J. State Chamber of Commerce v. Hughey, 774 F.2d 587, 593 (3rd Cir. 1985).

The Third Circuit further held that the Right to Know Act was impliedly preempted by the OSHA standard only to the extent that:

> "it is impossible to comply both with state law and with federal law; or . . . the provision serves as an obstacle to the accomplishment of Congress' object in the OSH Act to promote safe and healthful working conditions. *Id.* at 594."

The Third Circuit examined each section of the Right to Know Act and identified those sections which presented no issue of express or implied preemption. *Id.* Section 34:5A-14, container labeling, was identified as one section that might be invalidated by implied preemption. *Id.* at 595.

> "If New Jersey's imposition of the environmental hazard labeling requirements in the manufacturing sector, not for the purpose of protecting workers, but in the interest of firefighters, police officers, and the general public, does in fact stand as an obstacle to the accomplishment of the purposes of the federal standard, the New Jersey law must yield."

Id. at 596. The Third Circuit remanded this issue for a factual determination.

Plaintiffs now argue that this court does not have to reach the issue of whether the doctrine of implied preemption applies to container labeling. They claim that the Act, stripped of provisions requiring labeling of employee hazards, does not require workplace labeling of those substances on the environmental hazardous substances list. They further argue that the special health hazards list which excluded certain substances from trade secret protections does not apply to employers in the manufacturing sector. Finally, plaintiffs contends that the Universal Labeling requirement, N.J.S.A. 34:5A-14(b), is inapplicable to employers in the manufacturing sector.

Discussion

At the outset, defendant-intervenors object to the propriety of plaintiffs' motion. They assert that the Third Circuit has held that employers are required to provide labels for workplace substances on the environmental hazardous substances list. They point to the Third Circuit's language specifying that:

> "The Hazard Communication Standard does not expressly preempt Section 34:5A-14 to the extent that it requires that containers of environmental hazardous substances be labeled."

774 F.2d 596. I find defendants' argument unpersuasive. As plaintiffs point out in their reply brief, their motion raises issues of statutory interpretation not decided by the Third Circuit. The Third Circuit did not unequivocally state that substances on the environmental hazardous substances list must be labeled but only that express preemption did not apply *to the extent that* such labeling was required. I therefore will consider plaintiff's arguments.

> "From the proposition that a trial court must adhere to the decision and mandate of an appellate court there follows the long-settled corollary that upon remand, it may consider, as a matter of first impression, those issues not expressly or implicitly disposed of by the appellate decision."

Bankers Trust Co. v. Bethlehem Steel Corp., 761 F.2d 943, 950 (3rd Cir. 1985).

A. *Labeling of Substances on the Environmental Hazardous Substances List.*

Plaintiffs argue that N.J.S.A. 34:5A-14 does not require labeling of substances on the environmental hazardous substances list. They contend that the Act's provisions requiring labeling of substances on the workplace hazardous substance list demonstrates that the

labeling provisions were enacted to protect workers as opposed to addressing community or environmental health concerns. Plaintiffs appear to confuse the term "workplace" with "worker." It is as if every time they see the term "workplace" they substitute the term "worker" and then conclude that the exclusive purpose of the requirement is to protect the health of workers. Workplace regulations may be designed to protect workers, communities, the environment or all three. Occupational environments are major sources of pollutants. The Right to Know Act is an example of legislative drafting designed to confront health hazards originating in the workplace which may spread outward into surrounding communities and the general environment.

A careful reading of the legislative scheme makes it clear that even if labeling requirements designed to benefit workers are expressly preempted in the manufacturing sector, labeling requirements for environmental hazards remain viable, although subject to claims of implied preemption.

Employers are required to label every container containing a hazardous substance with the chemical name and the Chemical Abstracts Service Number or the trade secret registry number. N.J.S.A. 34:5A-14.[1] Pipelines must be labeled at the valves where a hazardous substance enters the pipeline and at other places where hazardous substances may potentially be released. *Id.*

A hazardous substance for purposes of the Act is defined as any substance included on the workplace hazardous substance list developed by the Department of Health. 34:5A-3(m). The workplace hazardous substance list is made up of three subsets:

1) Substances regulated by OSHA under 29 CFR 1910 subpart Z

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[1] Special provisions govern research and development laboratories which may contain many thousands of chemicals. N.J.S.A. 34:5A-14.

2) Any environmental hazardous substance, and

3) Any other substance which the Department of Health determines to pose a threat to employee health or safety.

The first and third components of the workplace hazardous substance list are expressly preempted by OSHA's hazard communication standard. But the second component, environmental hazardous substances, is, not expressly preempted.

An environmental hazardous substance is any substance on the environmental hazardous substances list developed by the Department of Environmental Protection pursuant to 34:5A-4. N.J.S.A. 34:5A-3(i) and (j).

The Department of Environmental Protection is required to:

> ". . . develop an environmental hazardous substance list which shall include, but not be limited to, substances used, manufactured, stored, packaged, repackaged, or disposed of or released into the environment of the State which, in the department's determination, may be linked to the incidence of cancer; genetic mutations; physiological malfunctions, including malfunctions in reproduction; and other diseases; or which, by virtue of their physical properties may pose a threat to the public health and safety."

There currently are 121 substances on the environmental hazardous substances list in 33 chemical groups. N.J.A.C. 7:1-G-2.1 and 2.2.

Because the environmental hazardous substances list is a non-preempted subset of the workplace hazardous substances list, I find that employers are subject to labeling requirements for any substance on that list by Section 14 of the Act, barring a finding that these requirements are subject to implied preemption.

B. *The Special Health Hazard List*

The Department of Health is required to develop a special health hazard list

> "Comprising hazardous substances which, because of their known carcinogenicity, mutagenicity, teratogenicity, flammability, explosiveness, corrosivity, or reactivity pose a special hazard of health and safety. . . ."

N.J.S.A. 34:5A-4. Employers are not allowed to obtain trade secret protection for substances on this list as they are for other substances that require labeling or reporting. N.J.S.A. 34:5A-15. The Third Circuit held that the denial of trade secret protection to special health hazard substances is 'neither preempted nor a taking without due process." 774 F.2d 598.

Plaintiffs urge that substances on the special health hazard list pertain only to employee health and safety because they are a subset of the Workplace Hazard Substances List. Therefore, they further argue, the special health hazard list does not apply to employers in the manufacturing sector since the OSH Act preempts employee health and safety regulations in that sector. As described in Section A of this Discussion, *supra*, the Workplace Hazardous Substance List is made of three subsets, one of which, the environmental hazardous substances list is not expressly preempted. Approximately 80 of 153 substances on the special health hazard substance list are also included on the environmental hazardous substance list. *Compare* N.J.A.C. 7:G-7.1 with App. B to N.J.A.C. 8:59-10.1 *et seq.* There is nothing in the statute or regulations to suggest that these substances are not subject to the special health hazard list provisions. Plaintiffs' argument that the special health hazard list is inapplicable to employers in the manufacturing sector is denied as it applies to substances on the environmental hazardous substances list.

C. *Universal Labeling Requirement*

Pursuant to N.J.S.A. 34:5A14(b), employers are required within two years of the effective date of the Act to label every container and pipeline entry and release point with the chemical names and chemical abstracts service numbers of the substances contained therein.[2] Substances constituting less than 1% of a mixture are exempted unless the substance is present at a facility in an aggregate of 500 pounds or more.

Plaintiffs argue that enforcement of Section 14(b) would require labeling for all substances, including those on the workplace hazardous substances list, which would nullify the Third Circuit's express preemption as to labeling of containers and pipes with substances on the Workplace Hazardous Substance List by employers in the manufacturing sector. Plaintiffs point to the anomalous result that would be reached by requiring labeling of only those substances that are not expressly preempted, that is substances on the environmental hazardous substances list and all nonhazardous substances. Plaintiffs comment: "the purpose of such labeling and how employees could be trained to react to it is beyond imagination." New Jersey Chamber of Commerce Brief at 11.

In opposition defendant-intervenors argue that the universal labeling requirement is neither a hazard communication nor a worker protection scheme. They contend that the OSHA standard only expressly preempts the labeling of workplace hazards in the manufacturing sector leaving in place labeling requirements for environmental hazardous substances and non-hazardous substances. Defendant-intervenors attempt to justify the universal labeling requirements by stating that:

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[2] Special provisions govern research and development employers and certain substances which may be labeled with their common name. N.J.S.A. 34:5A-14(b) and (d).

> "this identity information is useful to government agencies (e.g., DEP and DOH), firefighters, police and local health authorities. Among other uses the information will be utilized in public health studies, fire and accident prevention, and environmental law enforcement."

It is hard to accept this justification for *non-hazardous* substances. In fact it is hard to see any justification for a law so imprecisely tailored that it would require employer labeling of containers containing only water or even cream in government cafeterias. Nevertheless, except for workplace hazards in the manufacturing sector, the universal labeling requirements are not expressly preempted. Like the labeling of substances on the environmental hazardous substances list, the labeling under Section 14(b) must be tested by the criteria of implied presumption.

In conclusion, I find that (1) the New Jersey Right to Know Act requires the labeling of environmental hazardous substances, and this labeling requirement is not expressly preempted by the OSHA hazard communication standard; (2) the provisions of the New Jersey Act concerning substances on both the Special Health Hazard Substances List and Environmental Hazardous Substances List are applicable to employers in the manufacturing sector and are not expressly preempted and (3) the Universal Labeling Provision, except as it applies to workplace hazards in the manufacturing sector is not expressly preempted by the OSH Act and regulations. Defendant-intervenors are requested to submit an appropriate form of order.

UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY

Civil Action No. 84-3255

NEW JERSEY STATE CHAMBER OF COMMERCE, *et al.*,
Plaintiffs,

v.

ROBERT E. HUGHEY, ETC., *et al.*,
Defendants.

Civil Action No. 84-3892

FRAGRANCE MATERIALS ASSOCIATION
OF THE UNITED STATES, *et al.*,
Plaintiffs,

v.

WILLIAM VAN NOTE, ETC., *et al.*,
Defendants.

OPINION

[Filed Feb. 5, 1988]

DEBEVOISE, District Judge.

A. *The Proceedings*

Plaintiffs, New Jersey State Chamber of Commerce and Fragrance Materials Association of the United States, instituted this action seeking a determination that the New Jersey Worker and Community Right to Know Law, N.J.S.A. 34:5A-1, et seq. (the "N.J. Act") is pre-

empted in its entirety by the federal Occupational Safety and Health Act of 1970, 29 U.S.C. §§ 651, et seq. (the "OSH Act"). Reversing this court's ruling that the N.J. Act in its entirety as applied to workers in the manufacturing sector is preempted by the OSH Act and OSHA's Hazard Communications Standard, 29 C.F.R. § 1910.1200, the Court of Appeals held that certain provisions of the N.J. Act are not preempted, that certain provisions are preempted, that the container labeling provisions, N.J.S.A. 34:5A-14 ("Section 14"), are not expressly preempted by the OSH Act and regulations, but that the question whether those provisions as applied to labeling of containers and pipes containing environmental hazardous substances are impliedly preempted presents disputed issues of material fact. The Court of Appeals remanded the case for a determination of that question. *N.J. State Chamber of Commerce v. Hughey*, 774 F.2d 587 (3d Cir. 1985).

After the remand plaintiffs moved for judgment determining that by its terms the N.J. Act does not require workplace labeling of substances on the environmental hazardous substance list and universal labeling. I denied plaintiffs' motion, holding that (i) the decision of the Court of Appeals did not preclude me from deciding the issues raised by the motion because the Court of Appeals did not decide those issues; (ii) the N.J. Act by its terms requires the labeling of environmental hazardous substances; (iii) the provisions of the N.J. Act concerning substances in both the environmental hazardous substance list and the special health hazard list are applicable to employers in the manufacturing sector; and (iv) the universal labeling provision of the N.J. Act is not expressly preempted by the OSH Act and regulations.

The denial of plaintiffs' motion required that a determination be made whether § 14 of the N.J. Act as applied to labeling of pipes and containers in the manufacturing sector containing environmental hazardous substances is impliedly preempted, and whether the univer-

sal labeling provisions as applied in the manufacturing sector are impliedly preempted. To that end evidentiary hearings were held on July 24, 1986, April 2, June 18 and September 11, 1987.

B. *The Revised Standard*

On August 24, 1987, OSHA published amendments to the 1983 Standard. *See* 52 Fed. Reg. 31851-86 (Aug. 24, 1987) ("Revised Hazard Communication Standard"), *amending*, 29 C.F.R. 1910.1200, et seq. In the Revised Hazard Communication Standard, OSHA (1) extended the scope of coverage to employers outside the manufacturing sector; (2) defined more explicitly and expansively the issue addressed by this Federal Standard; and (3) amended the express preemption language. *Id.*

Previous decisions in this case interpreted the express preemption clause contained in the 1983 Standard which provided that "[t]his occupational safety and health standard is intended to address comprehensively the issue of evaluating and communicating chemical hazards to employees in the manufacturing sector, and to preempt any state law *pertaining to* this subject." 29 C.F.R. Section 1910.1200(a)(2), *reprinted in* 48 Fed. Reg. 53340 (Nov. 25, 1983). (Emphasis added).

In the Revised Hazard Communication Standard, OSHA amended this preemptive language to further provide that "[u]nder Section 18 of the [OSH] Act, no state or political subdivision of a state may adopt or enforce, through any court or agency, any requirement *relating to* the issue addressed by this Federal Standard, except pursuant to a Federally-approved state plan." 52 Fed. Reg. 31877 (Aug. 24, 1987). The "relating to" language adopted by OSHA parallels the language of Section 514 (a) of the Employee Retirement Income Security Act of 1974 ("ERISA"), 29 U.S.C. Section 1144(a), which expressly preempts state laws that "relate to any employee benefit plan. . . ." *Id.*

Plaintiffs note that when interpreting ERISA Section 514(a), the United States Supreme Court has concluded that "the section's preemptive scope was as broad as its language." *See, e.g., Shaw v. Delta Airlines, Inc.*, 463 U.S. 85, 98 (1983). The Court has held that a state law "relates to" a benefit plan if "it has a connection with or reference to such a plan." *Id.* at 97. The Court of Appeals in the present case noted that the OSH Act preemption language is less explicit than the comparable ERISA provision, 774 F.2d at 593, and therefore did not follow the preemption cases applying the "related to" language. Plaintiffs argue that incorporation of the "related to" language in the Revised Hazard Communication Standard is a new factor arising after the Court of Appeals decision and requires that the entire N.J. Act be deemed preempted to the extent that it relates to sectors governed by the Revised Standard.

I reject this reasoning and conclude that the Court of Appeals has determined what Congress intended, an intention that cannot be changed by administrative action.

C. *The Issue*

A summary of the provisions and purposes of the N.J. Act is set forth in the Court of Appeals opinion, 774 F.2d at 590-592. A summary of the applicable provisions of the OSH Act and of OSHA's Hazard Communication Standard is set forth in my original opinion, 600 F. Supp. at 612-615. The OSH Act and its preemptive effect is confined to occupational safety and health issues. The N.J. Act is directed both to occupational safety and health issues and also to the safeguarding of the safety and health of the general public through the identification and reporting of environmental hazards.

One of the purposes of the container labeling provisions of Section 14 is to identify and warn of environmental hazards. The Court of Appeals concluded that

Section 14 is not expressly preempted to the extent that it requires that containers of environmental hazardous substances be labeled. Nor can it be said that it is impossible to comply both with the N.J. Act and the OSH Act and regulations. The Court of Appeals specified the circumstances in which Section 14 as applied to environmental hazardous substances would be impliedly preempted:

> If New Jersey's imposition of the environmental labeling requirements in the manufacturing sector, not for the purpose of protecting workers, but in the interest of firefighters, police officers, and the general public, does in fact stand as an obstacle to the accomplishment of the purposes of the federal standard, the New Jersey law must yield.

774 F.2d at 596.

The evidence at the hearing was directed to the issue whether imposition of Section 14's requirements in the manufacturing sector stands as an obstacle to the accomplishment of the purposes of OSHA's Hazard Communications Standard.

D. *The Requirements of the Two Acts*

In order to determine whether the requirements of Section 14 stand as an obstacle to the accomplishment of OSHA's purpose it is first necessary to examine the requirements which each regulatory scheme imposes.

The OSHA Standard, 29 C.F.R. § 1910.1200, et seq. ("Standard"), requires manufacturing sector employers to implement comprehensive hazard communication programs. These integrated programs require the evaluation of all chemicals produced or imported in the United States, development of material safety data sheets (MSDS), application of container labeling and other forms of hazard warning, and implementation of em-

ployee education and training programs regarding workplace hazards.

Chemical manufacturers and importers are primarily responsible for hazard evaluation. 29 C.F.R. § 1910.1200(d). These manufacturers and importers transmit MSDS's to employer-purchasers for all hazardous chemicals in their workplaces. *Id.* § 1200(g). Each MSDS must include the following information: chemical identity as listed on the corresponding label; both chemical and common names for each single substance, mixture, and ingredient deemed hazardous; physical and chemical characteristics (e.g., flash point); physical hazards (e.g., combustible); health hazards, including symptoms of exposure; primary route of entry; permissible exposure limit; precautions for safe handling and use; control measures (e.g., work practices); and emergency and first aid procedures. *Id.* OSHA has chosen the MSDS as the primary vehicle for transmitting comprehensive hazard information to employees. 48 Fed. Reg. 53,305 (1983). These readily available MSDS's are keyed to the container labels and must contain the chemical identity language used on the label. 29 C.F.R. § 1910.1200(g)(2)(i), (f)(1)(i).

Manufacturing sector employers must ensure that all in-plant containers have labels with (1) language identifying the hazardous chemical and (2) a word, picture or symbol communicating the chemical hazard. *Id.* § 1200(f)(4). Additionally, containers leaving the workplace must be labeled with the name and address of the person who compiled the MSDS. *Id.* § 1200(f)(1)(iii). The rationale of the OSHA labeling requirement is to provide the worker with an identifying name of the hazardous substance and a clear warning of the nature of the hazard which will lead the worker to the relevant MSDS which contains the more detailed information about the hazards, safety precautions and first aid.

Section 14(a) of the N.J. Act mandates that a manufacturing sector employer label containers, valves and pipelines at any facility where hazardous substances are present. N.J.S.A. 34:5A-14(a). This label must bear the chemical name and Chemical Abstract Service Number ("CAS") of the hazardous substance. "Hazardous substance" is defined as "any substance or substance contained in a mixture, included on the Workplace Hazardout Substance List developed by the Department of Health ("DOH") pursuant to § 5 of this Act, introduced by an employer to be used, studied, produced or otherwise handled at a facility." N.J.S.A. 34:5A-3(m). The Act directs the DOH include on the Workplace Hazardous Substance List any environmental hazardous substance ("EHS") designated by the Department of Environmental Protection ("DEP") pursuant to § 4 of this Act. N.J.S.A. 34:5A-3(i). It is likely that the DEP will, over time, add additional substances to the 153 substances now appearing on the EHS list. *See* N.J.A.C. 8:59-10.1 (Appendix B).

The "Universal Labeling" requirement of § 14(b) of the New Jersey Act requires manufacturing sector employers by the deadline date to label *all* workplace containers, regardless of whether they contain hazardous substances, with the chmeical name and CAS number of the substance(s) contained therein. It employs the same labeling scheme as would be used in the labeling of an environmental hazardous substance. In the case of a mixture, § 14(b) will require the label to contain the names and CAS numbers of the five most predominant substances contained therein which constitute either 1% or more of the mixture, or are present at the facility in an aggregate amount of 500 pounds or more.

The evidence in the case was directed to the question whether implementation of the State regulatory scheme would constitute an obstacle to implementation of the federal scheme.

E. *The Evidence*

1. Charles A. Keller, Phd: Dr. Keller, a toxicologist and senior environmental affairs coordinator for Exxon Chemical Company, Paramins Division, testified that he is responsible for Exxon's labeling under the OSHA requirements. He identified a label he had prepared for the Exxon product nonyl phenol, also known to Exxon customers under the trade name ECA 9003. Nonyl phenol is irritating to the skin and somewhat corrosive to the eyes, has an extremely low degree of oral or dermal toxicity and is not considered toxic and has a high flash point—250 degrees Fahrenheit.

This product consists primarily of two chemical elements: nonyl phenol and dinonyl phenol. After the product is made by reacting nonene and phenol in the presence of a catalyst there remains in addition to the nonyl phenol and dinonyl phenol three other components, phenol, noene and carbonic acid.

The label which Dr. Keller prepared for nonyl phenol was designed to comply with Sections 14(a) and 14(b) of the N.J. Act. It set forth the chemical name and the Chemical Abstract Service Number (CAS). In addition it listed the five chemical components: Phenol (present in concentrations of 1-2%) in isolation is very hazardous and quite toxic. Nonene (present in the product in a concentration of less than 1% but present in containers in the Exxon plant in amounts in excess of 500 pounds) in isolation is highly flammable having a flash point of approximately 75 degrees Fahrenheit. Phenol nonyl and phenol dinonyl (the two primary components of the product known as phenol nonyl) have low toxicity, much less so than phenol. Carbonic acid (present in the product in a concentration of less than 1% but present in containers in the Exxon plant in amounts in excess of 500 pounds) is ordinary baking soda and in isolation is non-toxic and is not classified even as an irritant

under the labeling requirements of the OSHA Standard. In short the product phenol nonyl contains minute quantities of two products which in isolation are toxic or highly flammable but which as a part of the product do not have such hazardous properties, and the product contains a minute quantity of one product which both in isolation and as part of the product is totally non-hazardous.

The OSHA label, of course, need contain simply an identification of the product ("nonyl phenol" for in plant use or "ECA 9003" for outside use), a symbol or word picture to identify the hazard and if the product leave the plant the name and address of the manufacturer who would have prepared the pertinent MSDS. In fact Exxon has added additional information to its product label not required by OSHA, such as first aid and other information according to the American National Standards Institute label standard, a warning statement on reuse of the drum, information about the drum itself, the customer's address and upon customer request the customer's identification number, a number to assist Exxon keep track of the drum and perhaps other numbers.

2. *Aldo P. Osti*: Osti is a mechanical engineer with wide experience in the field of plant and occupational safety. He described the methodology which the OSHA Standard contemplates. Importers and manufacturers must first identify chemicals which are hazardous and pass on this information to employers by means of the MSDSs. The Standard contemplates a system to alert employees of any potential hazard in the workplace through the labeling of containers holding hazardous substances, preparation by employers of a written hazard communication program, employee training and access to and use of MSDSs, which describe the effect of the chemical on the body and the protective measures which should be taken. All unlabeled piping must be described in the written portion of the hazard communication program. There are certain alternatives to individual container

labeling in defined circumstances such as tank farms and laboratories.

Osti described the pertinent sections of the environmental hazardous substance labeling provisions of the N.J. Act, and he described the environmental hazardous substance list, which is a 154 substance subset of the workers hazardous substance list. According to Osti the drafters of the OSHA Standard rejected proposals to require inclusion of the chemical name and CAS numbers (although the chemical name may be used in lieu of the common or trade name); they rejected the requirement that pipes be labeled; and they rejected the proposal that the label contain a listing of the contents of mixtures, leaving the detailed information for inclusion on MSDSs.

Osti was asked to describe what the effect on the OSHA program would be if the New Jersey requirement of labeling environmental hazardous substances was implemented. If no mixtures were involved Osti stated that there would be no problem in combining the New Jersey requirements with the OSHA requirements. Where mixtures were involved, however, Osti concluded that "[i]f we follow the intent of the OSHA hazard communication system, it is to warn. The label itself is an alert and can be provided as information, whereas the New Jersey label, adding all of the components, or the five predominant ones, will tend to confuse the main intent of the label." (July 24, 1986 at 50). Some of the elements of a harmless mixture (such as phenol in nonyl phenol) alone would be very hazardous, and a well-trained worker seeing the listing of the hazardous substance required by the N.J. Act might well be misled in some circumstances into thinking a non-hazardous substance required the taking of extraordinary precautions. On a finding that an apparently hazardous container was not in fact hazardous he might become careless in his reaction to labels of truly hazardous substances.

Osti concluded that having N.J. Act labels on pipes and containers which did not have OSHA labels would cause additional worker confusion. He further concluded that New Jersey's universal labeling requirement applicable to all substances, whether or not hazardous, would cause confusion and chaos and would dilute the effect of the OSHA system. According to his testimony employee training would be more difficult because workers would have to be taught not only the OSHA system, but would have to be instructed to treat differently very similar labeling affixed in compliance with the N.J. Act.

As to the number of labels required by the N.J. Act Osti stated, ". . . it would be a horrendous task to be able to label all containers, to the extent that it would look like a Christmas tree where labels are dangling all over with very, very confusing results. (July 24, 1986 at 65). As to the impact of N.J. Act labeling Osti stated, ". . . I believe the employee, or the exposed individual would disregard either or the other of the labels because it would be too much of a burden for that individual to take time to understand what the problems would be for working in that area." (*Id.* at 65, 66). Disregarding the labels would result in employee injuries.

3. *Lester E. Schmaltz*: Schmaltz, a civil engineer and Division Manager of Exxon Chemical Company's Paramins and Specialties, is responsible for ensuring compliance with the OSHA Standard at the Bayway plant.

A training program was designed to implement the Standard in which employees are instructed how to react to warning labels. Labels are applied to containers having hazardous materials such as 55 gallon drums, tank wagons, tank cars, tanks, reactive vessels and other vessels. There are approximately 350 fixed vessels which are identified, some by having labels affixed and some by labeling an area as permitted by the OSHA Standard. There are approximately 100 55-gallon drums used in-

plant which are labeled pursuant to the Standard and there are approximately 6,000 drums which are shipped out and which are labeled pursuant to the Standard.

If the N.J. Act's § 14(a) environmental labeling (not universal labeling) requirements were met, Schmaltz estimated that there would be about 2,100 fixed points (fixed vessels and pipes) requiring labels and 11,500 in-plant containers requiring labels. An additional label would have to be added to the 6,000 drums shipped out of the plant.

In Schmaltz's opinion this increased number of containers and plant labels required under Section 14(a) of the N.J. Act would provide information which would be confusing to the workers. Workers who had been trained to respond to labels would be confronted with labels on containers and pipes containing materials which are not hazardous under the OSHA regulations, leading to wrong responses. Precautions might be taken which were unnecessary and necessary precautions might not be taken.

If universal labeling under Section 14(b) of the N.J. Act were implemented in Exxon's Bayway plant, about 8,100 fixed points in the plant would require labels, and a total of 38,900 in-plant and shipping containers would require labels. Of the 47,000 points and containers being labeled, some would require one and some more than one label to meet the combined requirements of the OSHA Standard and Section 14(a) and 14(b) of the N.J. Act. This vastly increased number of labels, according to Schmaltz, would compound worker confusion and further impair the OSHA worker safety objectives.

4. *Philip P. Doucette*: Doucette is director of occupational health and safety of International Flavors and Fragrances ("IFF"), a firm which manufactures flavors and fragrances and aroma chemicals used in flavors and fragrances. Employees in its plant are required to make up products which contain from three to 400 ingredients.

Using a batch sheet, the compounders of a product go to individual containers, draw off the appropriate amount of the contents, add them to the mixing vessel, blend the batch and then draw off the final product into drums for shipping or further use. IFF's flavor facility has 50,000 to 60,000 containers; its fragrance facility has 60,000 to 70,000 containers. Containers range in size from four ounces, to 55 gallons to 400 gallon tote tanks. Labels affixed to containers pursuant to the OSHA Standard use the chemical name only if it is simple and easy to use. Otherwise the common or trade name is used. CAS numbers are not included. For example, the common or trade name of a material IFF uses frequently is Galaxoide. The chemical name which the N.J. Act requires be included is 1,3,4,6,7,8-hexahydro-4,6,6,7,8,8-hexamethyl cyclopenta gamma 2 benzopyrene.

Doucette was asked his opinion whether labeling of a flavor or fragrance mixture in the workplace with chemical names and CAS numbers for the five most prominent substances in the container would have an impact on the effectiveness of the OSHA label for the container. He concluded that the N.J. label would interfere with the ability of the worker to recognize and respond to the warning label. This would occur in part because many if not all of the five most prominent ingredients will be non-hazardous items and will bear no relationship to the OSHA hazard warning. The ten most widely used flavor ingredients are alcohol, starches, water, sugar, propylene glycol, whey, fruits and juices, vegetable oils, citric acid, citrus oils, orange, lemon-lime and grapefruit—all non-hazardous by OSHA standards. Fifty percent of the products in IFF's flavor facility have only those products in their top five ingredients.

Doucette believed that confusion would result from the worker confusing the CAS number required by the N.J. Act with the number designed to lead the worker from the OSHA identifying label to the appropriate MSDS.

This witness was of the opinion that confusion would not be avoided by separate labels or use of a specified color for the N.J. labels. Since the OSHA labels are affixed by manufacturers, and since IFF receives materials from all over the United States, the OSHA labels arrive in many different sizes, shapes and colors, some of which would be likely to resemble the N.J. labels. According to Doucette in an emergency situation confusion would be compounded, leading to the danger that workers would see the listing of a non-hazardous component and erroneously conclude that a hazardous mixture was safe or else that a worker would use the wrong number on the container holding dangerous materials and be unable to locate the correct MSDS. Training would not, in Doucette's opinion, cure the situation. The attempt to instruct the worker about what he would and should not take into account would result in longer, more complex, more confusing and less effective training programs.

Even if IFF did not place CAS numbers on its containers, other non-OSHA required numbers would appear. IFF itself has a product code number (its IPC number) which, among other things, serves as the link to MSDSs. Manufacturers often send IFF containers having the manufacturer's lot numbers. Some incoming containers have United Nations or Department of Transportation numbers. Some have weights listed. Lot and batch numbers appear. Infrequently manufacturers which supply products to IFF use names for the products different from the names IFF uses, which is why IFF relies on its product numbers to lead to the appropriate MSDS.

5. *Diane T. Manning, PhD*: Dr. Manning, an associate professor of public health and chairman of the Department of Education at Tulane University, is a specialist in the use of printed materials to inform workers about occupational hazards.

She described the OSHA workplace labeling requirements as consisting of three components: (i) The label

is designed to provide a quick physical warning. (ii) The MSDS is designed to provide detailed information about the hazard and how to deal with it. (iii) The training program is designed to teach workers how to respond to the label and use the MSDS.

According to Dr. Manning, because of their relative youth and health, workers are less likely to be receptive to health and hazard messages than the population as a whole. The inclusion of irrelevant information on a label would make it less likely that in the training program the worker would absorb and retain the information which he needed.

Asked about the effect of the inclusion on labels of information required by the N.J. Act, Dr. Manning testified that the inclusion of apparently conflicting information would cause what she called "cognitive dissonance". For example if a product was labeled hazardous pursuant to the OSHA Standard but the worker read that a principal component was water, he would receive a conflicting message. This would tend to discredit the OSHA warning system. To attempt to avoid this effect through instruction in the training program would, according to Dr. Manning, render the training program more complex and less effective. Dr. Manning contrasted the effect of adding names of non-hazardous chemicals to the label, which could have the cognitive dissonance effect, from adding numbers which, by themselves, would not send a message which would conflict with the hazard warning.

6. *Margaret C. Samways*: Samways, training project director for NUS Corporation, specializes in training workers in the area of occupational health and safety, particularly as it pertains to hazard communication. She has worked extensively with the OSHA Standard, preparing MSDSs and teaching and lecturing on the subject. In her opinion if an OSHA label containing the common name of the product and the warning were sup-

plemented to include the CAS numbers and chemical names of the five predominant ingredients there would be a definite conflict with the workers' understanding of the hazards warning label if any of the five ingredients were obviously non-hazardous. There would be a mixed message, detracting from the credibility of the OSHA hazard warning. Further confusion would result if two products having different hazards had the same five predominant chemicals. In addition, according to Samways, the inclusion of the five predominant chemicals could create difficulties in finding the proper MSDS. For these reasons Samways was of the opinion that the N.J. Act's requirement of inclusion of CAS numbers and chemical names would have a negative impact upon the effectiveness of the OSHA labeling requirement, an impact which would not be lessened by the use of separate labels.

If the two labeling systems were implemented, discrimination training would have to be included in the OSHA training program. Samways foresaw difficulties in making such training fully effective because, unlike weight or batch numbers, the New Jersey label information would have no workplace purpose and therefore the workers would have no recurring reason to distinguish it from the OSHA label information to which it bore significant simularities.

7. *Kenneth D. Rosenman, M.D.*: Dr. Rosenman is certified in internal medicine and specializes in occupational and preventive medicine. He has had extensive experience in training workers in the field of health hazards, particularly chemical hazards, and had major responsibilities for implementing the N.J. Act.

Dr. Rosenman testified that there are approximately 50,000 substances used by New Jersey industry of which approximately 48,000 are not included on any hazardous substance list, federal or state. Of the 48,000 substances, there are some which are in fact hazardous;

there is a very large group which have not been tested and may very well be hazardous; and there are substances which actually are innocuous. A purpose of New Jersey's environmental and universal labeling requirements is to provide general information to health workers, firemen and the general public so that they can meet the dangerous or health impairing situations which arise even with respect to usually innocuous materials. Another purpose of the New Jersey requirements is to assist doctors in the diagnosis of their patients, making it easier for them to determine the substances to which there has been exposure.

Dr. Rosenman listed a number of exceptions to New Jersey's universal labeling requirements: process containers, containers waiting to be shipped which have DOT labels affixed to them, certain pipelines in refineries which are in compliance with TOSCA labeling, containers and pipelines labeled pursuant to requirements of the Food and Drug Administration, the Atomic Energy Act or EPA regulations, and a number of others.

According to Dr. Rosenman the chemical name of a product is needed in order to have access to the medical and toxicological literature. Frequently the trade name or common name does not serve this purpose. The purpose of the CAS number is to meet the situation where a chemical has multiple chemical names. It assures access to the literature in that situation.

In Dr. Rosenman's opinion the inclusion on a container label of the chemical name of the substance, its CAS number and the chemical names and CAS numbers of the five most predominant substances would not be confusing to employees. He based this on his experience in conducting education and training of workers from which he has observed that they understand and can be trained to identify pertinent chemical names. There are many labels and information materials in plants and people

are used to seeing and acting on those which pertain to hazards.

8. *Captain George J. Browne*: Brown is Fire Captain and safety officer of the Weehawken Fire Department. During his professional career he has responded to 15 to 20 emergencies inside industrial plants and he has visited plants for fire inspection and pre-fire planning on 40-50 occasions. He observed many kinds of labels on various kinds of hazardous and non-hazardous chemical containers. In addition to chemical identification there was information such as terms of storage, the address of the manufacturer, lot numbers and disposal instructions, their chemical names, CAS numbers and trade names. He testified that he was able to concentrate on the chemical information which he needed and disregarded the rest.

Captain Browne testified about the usefulness to fire fighters and health workers of the availability of the CAS number and the chemical name of each substance. That evidence bore only marginally upon the preemption issue.

9. *Charles O'Connor*: O'Connor is a consultant in the field of labeling hazard analysis, having worked for industrial corporations and government agencies. He has written or reviewed 25,000-30,000 labels and evaluated them for effectiveness.

O'Connor testified that often there is a wide variety of labeling systems in operation in a plant at the same time, each designed to comply with particular legal requirements. For example, DOT and OSHA hazard labels are used concurrently. O'Connor stated that he does not know of any United States Chemical Company that ships a container that contains only an OSHA label.

There are, according to O'Connor, ways to distinguish one label from another and to direct people to the label relevant to them. The format of the label can serve this

end, such as putting certain information in boxes, distinguishing one type of information from another, putting information in a logical order. The persons who need particular information can be trained how to obtain it readily and to recognize the label containing that information.

O'Connor had toured the Exxon plant which was the subject of earlier testimony. He observed Exxon's method of labeling containers and noted that in addition to the basic OSHA labeling requirements Exxon included information about spills, leaks, fire disposal, first aid, container disposal. Du Pont's chemical container labels also include considerable information beyond OSHA's requirements, including the chemical name and CAS numbers. Similarly chemical container labels of Allied Chemical Company, American Cyanamid Company and Dow Chemical Company provide information beyond that required by OSHA. In O'Connor's opinion none of this additional information detracts from the overall significance of the hazards warnings on the labels, nor would the addition of the information required by Section 14(a) (environmental hazards) or Section 14(b) (universal labeling) of the N.J. Act detract from the hazards warning. The additional information, like other non-hazard warning information, could be isolated by placing it in a box or by other means. O'Connor would avoid confusing MSDS numbers and CAS numbers by adding the prefixes "MSDS" and "CAS" before or after the number.

O'Connor identified a number of photographs of labeling at the Exxon plant. Among other things they showed a variety of label formats, labels containing the CAS number and chemical name, pipes and valves containing labels not required by OSHA. He had toured the Exxon plant and observed that there was a wide range of containers, substances, pipelines, facilities and fixed vessels that were labeled beyond what OSHA required. From his experience he was able to testify that labeling in the

Exxon plant was similar to labeling in other chemical plants. The labeling was done for the practical purpose of informing people who needed to know of the contents of the labeled items. All of this can be done, in O'Connor's opinion, without impairing the effectiveness of the OSHA hazard warning. It is a recognized practice, he testified, to train workers to discriminate between the different kinds of labels and information and to understand the purpose of each. Workers, like other people, will quickly go to the particular information they need and ignore the rest. Formatting and training will eliminate the possibility of confusion according to O'Connor.

10. *Samuel Glucksberg, PhD*: Dr. Glucksberg is a professor of psychology at Princeton University specializing in cognitive psychology and the psychology of language. He has served as a consultant to the FTC with respect to warning labels on drugs.

Dr. Glucksberg testified about the ways in which people discriminate between different kinds of information to select what is relevant to them, noting that labeling and training facilitate the process. Referring to container labels, he stated that by means of formatting supplemented by training it is a simple matter to enable workers to select hazard information from other information that may be contained in the various labels on the container. The motivation of workers to ensure their own safety would enhance the effectiveness of the labeling and training. In Dr. Glucksberg's opinion the OSHA and N.J. Act requirements can be included on a single container label in the workplace without impairing the effectiveness of the OSHA hazard warning. The formatting of the label and proper training of workers could effectively ensure that workers focus on the hazard warning in appropriate circumstances. Similarly, Dr. Glucksberg was of the opinion that if New Jersey's universal labeling requirement were implemented there would be no impairment of the OSHA purposes whether the New

Jersey labels were affixed to containers which already had labels of some sort or whether the New Jersey labels were affixed to containers which otherwise would carry no labels. He did not believe that the presence on a label of an OSHA hazard warning followed by a listing of non-hazardous ingredients would result in cognitive dissonance, as people generally are aware that hazardous substances often contain non-hazardous ingredients. He also testified that confusion of numbers designed to lead to an MSDS with numbers placed on a container for other purposes could readily be avoided by such devices as physical separation or different type facings. Already workers must deal with several different numbering systems on the same containers, each serving a distinct purpose, and there is no indication that workers cannot identify and use the sets of numbers which they need.

11. *Arthur Oleinick, M.D.*: Dr. Oleinick, an associate professor of public health law at the University of Michigan School of Public Health, has both a law degree and medical degree in addition to his masters degree in public health. He teaches an occupational health law course for graduate students. Previously he served as an officer of the United States Public Health Service and in 1980 he assumed responsibility as senior project officer for the OSHA chemical hazard identification project. This resulted in an earlier version of the Hazard Communication Standard, which contemplated use of the CAS numbers on labels along with the common name. As part of his academic work he has assembled data about state right to know laws.

When developing the earlier version of the OSHA hazard Communication Standard Dr. Oleinick met with members of industry on a number of occasions. No objection was ever voiced against use of CAS numbers on the ground of confusion. The objection was on the ground that use of CAS numbers would result in the disclosure of trade secrets. Nor were concerns expressed

that use of chemical names would cause confusion. The objection to chemical names was that many were long and complex and that trade secrets would be disclosed.

Dr. Oleinick had reviewed the only study of which he was aware concerning worker training under the OSHA Standard. The workers concluded that the subject matter was easy and commented that they would like additional information. In Dr. Oleinick's opinion there will be no difficulty training workers to take note of the OSHA hazard warning labels and to find the needed MSDS. He was of the opinion that it will be a simple matter to instruct workers of the purpose of the New Jersey mandated labels, and that no confusion should result from the presence of such labels in the workplace.

12. *Chief James T. Heller*: Chief Heller is Chief and Director of the Rahway Fire Department and is a qualified teacher of fire prevention.

The City of Rahway receives from each manufacturing concern located within its jurisdiction an Emergency Service Information Survey. These surveys list and describe hazardous materials in the applicable plant and provide for each material CAS numbers, the ID numbers, container size, the mixture, inventory and number of units. The New Jersey Department of Transportation Hazards Material Table containing 154 substances is used to compile the survey. The ID number is the United Nations or North American identification number system. It differs from and is unrelated to the CAS number system.

According to Chief Heller his fire department and fire departments throughout New Jersey and the United States use the Emergency Response Guidebook to provide guidance for the immediate procedures to be followed in an emergency. The Guidebook, which is kept on all vehicles rseponding to fires, uses the chemical names and UN identification numbers (not the CAS numbers). It

refers to the 154 substances contained in the Department of Transportation list. In Chief Heller's opinion the presence of CAS numbers and the labeling required under Sections 14(a) and (b) of the N.J. Act not only are unnecessary for fire fighting purposes but would actually slow down the response process, since CAS numbers would have to be transposed to ID numbers so as to be compatible with the Emergency Response Guidebook. He agreed that there were hazardous substances which may not yet be set forth in the DOT list, but suggested that the availability of CAS numbers on container labels and the ability to conduct research about the chemicals so identified would not assist fire fighters in emergency situations.

F. *Factual Findings*

As recited above the Court of Appeals held on appeal that the OSHA Hazard Communication Standard does not expressly preempt N.J.S.A. 34:14 of the N.J. Act insofar as it requires that New Jersey employers in the manufacturing sector label containers and pipelines containing environmental hazardous substances and that such employers label all containers and pipelines within two years of the effective date of the Act. The Third Circuit instructed this court to determine "[i]f New Jersey's imposition of the environmental hazard labeling requirements in the manufacturing sector, not for the purpose of protecting workers, but in the interest of firefighters, police officers, and the general public, does in fact stand as an obstacle to the accomplishment of the purposes of the federal standard." *Hughey* at 596. I concluded that considerations of judicial economy dictated that the hearing on the obstruction issue deal with both environmental hazards labeling and universal labeling.

The concrete facts going into the determination of the underlying issue are contained in the testimony of the witnesses summarized above. I am confident that all of

the witnesses were truthful and I accept as true all the facts to which they testified. Needless to say the opinions of the parties' witnesses about the ultimate factual conclusions to be drawn were in conflict and I must determine which were the most persuasive.

Plaintiffs' basic thesis in support of their contention that the New Jersey labeling requirements will obstruct the OSHA Standard is that serious worker confusion will result from the dual labeling system. The confusion will arise, plaintiffs contend, from such things as: (i) the very existence of two labeling systems and the inability of workers to determine which one pertains to worker hazards; (ii) the multiplicity of labels, tending to overwhelm the OSHA hazard labels; (iii) the labeling of hazardous components of mixtures on containers which do not require an OSHA hazard label; (iv) the labeling of a non-hazardous component of a mixture which is in fact hazardous and must carry an OSHA hazard label; and (v) the existence of different numbering systems which will make it difficult for a worker to find the appropriate MSDS.

While unquestionably it would be possible to cause worker confusion through inappropriate label formatting and positioning and through inadequate worker training, I conclude that this is most unlikely to occur and that the OSHA labeling requirements can co-exist with the Section 14(a) and (b) labeling requirements of the N.J. Act without serious risk of one system obstructing or interfering with the other.

In the first place the OSHA system is very simple. It contemplates labels with a minimum of information designed to alert the worker to the presence of a hazard, the nature of the hazard and the existence of an MSDS which will provide all necessary details about the hazard and how to deal with it. It contemplates a training program to ensure that workers will recognize the labels

and take appropriate action with respect to the hazard when necessary.

The OSHA system cannot have contemplated that the OSHA hazard label would be the only label on pipes and containers in manufacturing plants. The testimony established conclusively that without regard to New Jersey's labeling requirements, pipes and containers typically contain a multitude of labels which include such things as the chemical names, CAS numbers, the manufacturer's product or inventory number, safety instructions, instructions about disposing of containers. OSHA training would require that workers be instructed how to identify the OSHA hazard label amidst all the other labels. The addition of the material required by the N.J. Act would not change the situation materially.

The OSHA label can be distinguished from all other labels by proper formatting and positioning, and since it is in the manufacturer's interests to alert his workers to potential hazards there is no reason to believe that proper and effective formatting and positioning will not be the rule. Further, OSHA mandated training is designed to complement proper formatting and positioning. Formatting and positioning and training, all of which are within the contemplation of the OSHA system, will ensure that implementation of New Jersey's environmental and universal labeling requirements will not stand as an obstacle to the accomplishment of the purposes of the federal standard.

G. *Conclusion*

The above finding compels the legal conclusion that the OSH Act and OSHA's Hazard Communication Standard does not impliedly preempt the N.J. Act's environmental and universal labeling requirements.

Defendants' and intervenors' attorneys are requested to submit an order implementing this opinion.

If there are any open issues remaining in the consolidated proceedings I request that they be brought on promptly for resolution by motion. I am confident that the record in the case is sufficient so that any remaining issues can be resolved without the need for a further evidentiary hearing.

/s/ Dickinson R. Debevoise
DICKINSON R. DEBEVOISE
U.S.D.J.

Dated: February 5, 1988

UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY

[Filed March 25, 1988]

Chambers of
Dickinson R. Debevoise
Judge

March 25, 1988

RE: New Jersey State Chamber of Commerce, et al. v. Hughey, et al.
Civil Action No. 84-3255

Fragrance Materials Association of the United States, et al. v. Van Note, et al.
Civil Action No. 84-3892

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Trenton, NJ 08625

Gentlemen:

Enclosed is a copy of the Final Judgment which I have signed and filed. I would comment upon the points which counsel raised in their letters to me concerning the form of judgment as follows:

1. I conclude that I was mistaken in my March 10, 1986 bench opinion when I stated, in effect, that the universal labeling requirements are preempted insofar as they apply to workplace hazards in the manufacturing sector. The labeling of environmental hazards, which the Court of Appeals found not to be preempted, involves labeling of some substances which are also workplace hazards. There is no reason why universal labeling should not apply to workplace hazards provided i) the primary purpose of universal labeling is not protection of workers and ii) such labeling does not have the effects which would call for implied preemption. See, *Manufacturers Association of Tri-County v. Knepper*, 801 F.2d 130 (3d Cir. 1986), *cert. denied*, —— U.S. —— (1987).

Universal labeling has primary pruposes other than worker protection. The evidentiary hearings on the issues of implied preemption proceeded on the basis of the labeling of all containers. Without in anyway passing on the wisdom, utility or cost-benefit ratio of universal labeling, I concluded it could be implemented without frustrating the OSH Act.

2. This case is limited to the issues raised by application of the New Jersey Right to Know Law to the manufacturing sector. The extension of the OSHA Hazard Communication Standard to the non-manufacturing sector has not been and will not be dealt with in this case. I would be surprised if the New Jersey authorities did not apply to the non-manufacturing sector the principles developed in this case. If they do not, another lawsuit will be required.

3. It would be impossible, of course, for employers to bring themselves into compliance with the New Jersey Act immediately upon modification of the injunctive decree to permit New Jersey to implement its environmental and universal labeling requirements. They must have known that compliance might be required and they should

have anticipated that possibility. In order to provide some elbow room, the judgment includes a provision giving the employers six months to comply with the State requirements or such longer period as the State authorities may provide.

4. I do not believe it necessary for the judgment to list preempted and non-preempted provisions of the New Jersey Act. That can be ascertained by reference to the opinions of the Court of Appeals and this court.

5. Count III of Fragrance Materials Association complaint will be dismissed without prejudice since I have not formally addressed its merits.

Very truly yours,

/s/ Dickinson R. Debevoise
DICKINSON R. DEBEVOISE
U.S.D.J.

DRD:el
Enc.

UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY

Civil Action No. 84-3255 (DRD)

NEW JERSEY STATE CHAMBER OF COMMERCE, *et al.*,
Plaintiffs,

v.

ROBERT E. HUGHEY, ETC., *et al.*,
Defendants.

Civil Action No. 84-3892 (DRD)

FRAGRANCE MATERIALS ASSOCIATION OF THE UNITED STATES, *et al.*,
Plaintiffs,

v.

WILLIAM VAN NOTE, ETC., *et al.*,
Defendants.

FINAL JUDGMENT AFTER REMAND

[Filed Mar. 25, 1988]

The Court of Appeals, in its opinion of October 10, 1985 (774 F.2d 587), having remanded to this court the issue of whether N.J.S.A. 34:5A-14 of the New Jersey Worker and Community Right to Know Act (the Act) is impliedly preempted by the OSHA Hazard Communication Standard as applied to the labeling of environmental hazardous substances, and the plaintiffs having presented additional issues concerning the labeling of environmental hazardous substances, the labeling of special health hazard substances and universal labeling un-

der the Act, and the court having issued an oral opinion on March 10, 1986 disposing of some of these issues, and testimony by experts and other witnesses as well as post-trial briefs having been presented by the parties, and the court having issued a written opinion on February 5, 1988 setting forth its findings of fact and conclusions of law, which findings and conclusions are incorporated herein;

IT IS this 25th day of March 1988,

ADJUDGED that the October 10, 1985 decision of the Court of Appeals does not preclude this court from deciding the additional issues raised on remand by the plaintiffs since the Court of Appeals did not decide those issues; and

IT IS FURTHER ADJUDGED that the Act by its terms requires the labeling of environmental hazardous substances; and

IT IS FURTHER ADJUDGED that the provisions of the Act concerning substances in both the environmental hazardous substance list and the special health hazard substance list are applicable to employers in the manufacturing sector; and

IT IS FURTHER ADJUDGED that the universal labeling provision of the Act is not expressly preempted by the federal OSH Act and the OSHA Hazard Communication Standard; and

IT IS FURTHER ADJUDGED that the OSH Act and the OSHA Hazard Communication Standard do not impliedly preempt the environmental and universal labeling requirements of the New Jersey Act; and

IT IS FURTHER ADJUDGED that Count III of plaintiffs Flavor and Fragrances complaint is hereby dismissed without prejudice; and

IT IS ORDERED that the permanent injunctions against enforcement of the Act entered by this court against the defendants in these actions on January 11, 1985 and January 14, 1985 are hereby dissolved insofar, and only insofar, as they preclude the State of New Jersey from enforcing the provisions of the Act declared not preempted and enforceable in this Final Judgment After Remand and in the opinion of the Court of Appeals dated October 10, 1985; and

IT IS FURTHER ORDERED that plaintiffs shall have six months from the date hereof to comply with the environmental and universal labeling requirements of the New Jersey Act, provided, however, that nothing herein shall preclude New Jersey authorities from extending the time for compliance.

/s/ Dickinson R. Debevoise
DICKINSON R. DEBEVOISE
U.S.D.J.

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

Civil Action No. 84-3892D

FRAGRANCE MATERIALS ASSOCIATION OF THE UNITED STATES, *et al.*,
Plaintiffs,

v.

WILLIAM VAN NOTE, *et al.*,
Defendants.

ORDER DENYING MOTION TO STAY JUDGMENT PENDING APPEAL

[Filed May 12, 1988]

[Entered May 13, 1988]

The plaintiffs having moved to stay pending appeal the Final Judgment After Remand entered by the Court on March 25, 1988, and the Court having issued an oral opinion from the bench on May 9, 1988;

IT IS on this 12th day of May, 1988,

ORDERED that the motion to stay judgment pending appeal is hereby denied.

/s/ Dickinson R. Debevoise
DICKINSON R. DEBEVOISE
U.S.D.J.

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

No. 88-5332

FRAGRANCE MATERIALS ASSOC. OF U.S., *et al.*,

vs.

WILLIAM VAN NOTE, *et al.*
FRAGRANCE MATERIALS ASSOC. OF U.S., *et al.*,
Appellants

(NJ Civ. 84-3892)

Present: HIGGINBOTHAM, BECKER, and HUNTER, *Circuit Judges.*

Appellants' motion to stay the Judgment of the D.C. pending appeal.

/s/ Arpiod Longacre
Deputy Clerk 7-5019

Case is listed on Merits on 7-25-88 with No. 88-5283.

Counsel for appellees advised that he has not received a copy of the motion as of 6-3-88 a.m. but will expect to file an answer by Monday, 6-6-88.

ORDER

The foregoing Motion(s) is granted pending oral argument in the case. The panel will reconsider the matter at that time.

By the Court,

/s/ James R. Becker
Circuit Judge

Dated: Jun. 21, 1988

APPENDIX C

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

Nos. 88-5283, 88-5332

NEW JERSEY CHAMBER OF COMMERCE, CHEMICAL INDUSTRY COUNCIL OF NEW JERSEY, NEW JERSEY BUSINESS AND INDUSTRY ASSOCIATION, CHEMICAL SPECIALTIES MANUFACTURERS ASSOCIATION, INC., MERCK & CO., INC., MAGNESIUM ELEKTRON, INC., CP CHEMICALS INC., CHEM-MARK, INC., EXXON CHEMICALS AMERICAS, a division of Exxon Corporation, SCHERING CORPORATION, ESSEX CHEMICAL CORPORATION and INGERSOLL-RAND COMPANY, and SHELL CHEMICAL COMPANY, a division of Shell Oil Company,

New Jersey State Chamber of Commerce, Chemical Industry Counsel of New Jersey; New Jersey Business and Industry Association; Chemical Specialties Manufacturers Association, Inc.; Merck & Co., Inc.; Magnesium Elektron, Inc., Exxon Chemical Americas, a division of Exxon Corporations; Ingersoll-Rand Company; and Shell Chemical Company, a division of Shell Oil Company,

Appellants in No. 88-5283

v.

ROBERT E. HUGHEY, Commissioner of Environmental Protective; J. RICHARD GOLDSTEIN, M.D., Commissioner of Health and WILLIAM VAN NOTE, Acting Commissioner of Labor and THE STATE OF NEW JERSEY,

Appellees in No. 88-5283

FRAGRANCE MATERIALS ASSOCIATION OF THE UNITED STATES, FLAVOR AND EXTRACT MANUFACTURE'S ASSOCIATION, BUSH BOAKE ALLEN, INC., FRAGOCO, INC., FIRMENICH, INC., INTERNATIONAL FLAVORS AND FRAGRANCES, INC., ISOGENICS, INC., H.J. KOHNSTAMM & CO., INC., V. MANE FILS, INC., NOVILLE ESSENTIAL OIL COMPANY, INC., POLAROME MANUFACTURING CORP., ROURE BERTRAND DUPONT, INC., TAKASAGO USA INC., UNGERER & CO., and UNIVERSAL FRAGRANCE CORPORATION,

Appellants in No. 88-5332

v.

WILLIAM VAN NOTE, Acting Commissioner for the State of New Jersey; J. RICHARD GOLDSTEIN, Commissioner of Health for the State of New Jersey; ROBERT E. HUGHEY, Commissioner of Environmental Protection for the State of New Jersey

Appellees in No. 88-5332

and

JOSEPH H. RODRIGUEZ, Public Advocate of the State of New Jersey; NEW JERSEY STATE INDUSTRIAL UNION COUNCIL, AFL-CIO (IUC); CITIZEN ACTION OF NEW JERSEY; PHILADELPHIA AREA PROJECT ON OCCUPATIONAL SAFETY & HEALTH (PHILAPOSH); NEW JERSEY ENVIRONMENTAL LOBBY; NEW JERSEY STATE FIREMEN'S MUTUAL BENEVOLENT ASSOCIATION (FMBA); INTERNATIONAL ASSOCIATION OF FIREFIGHTERS, NEW JERSEY AFL-CIO (IAFF); COMMUNICATION WORKERS OF AMERICA & GLASS WORKERS INTERNATIONAL UNION, AFL-CIO, LOCAL 514-G; PENNSYLVANIA FEDERATION BROTHERHOOD OF MAINTENANCE OF WAY EMPLOYEES, AFL-CIO; COALITION AGAINST TOXICS; LEAGUE OF CONSERVATION VOTERS (New Jersey); STUDENT PUBLIC INTEREST RESEARCH GROUP OF NEW JERSEY (N.J.

PIRG); ENVIRONMENTAL ACTION (Washington, D.C.); LEAGUE OF WOMEN VOTERS OF NEW JERSEY; SIERRA CLUB (New Jersey); AMERICAN LUNG ASSOCIATION OF NEW JERSEY; NEW JERSEY TENANTS ORGANIZATION (NJTO); NEW JERSEY ASSOCIATION OF COUNTY HEALTH OFFICERS; and NEW JERSEY HEALTH OFFICERS ASSOCIATION

Defendant-Intervenors in No. 88-5332

(D.C. Civil Nos. 84-3255 and 84-3892)

SUR PETITION FOR PANEL REHEARING AND SUGGESTION FOR REHEARING IN BANC

Present: GIBBONS, *Chief Judge*, SEITZ, HIGGINBOTHAM, SLOVITER, BECKER, GREENBERG, HUTCHINSON, SCIRICA, COWEN, and NYGAARD, *Circuit Judges*.

The petition for rehearing filed by Appellants having been submitted to the judges who participated in the decision of this Court and to all the other available circuit judges in active service, and no judge who concurred in the decision having asked for rehearing, and a majority of the circuit judges of the circuit in regular active service not having voted for rehearing by the court in banc, the petition for rehearing is DENIED.

Judge Hutchinson would grant rehearing.

BY THE COURT,

/s/ JAMES R. BECKER
Circuit Judge

Dated: Apr. 7, 1989

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

No. 88-5283

RE: N.J. STATE CHAMBER OF COMMERCE, ETC.,
Appellants

vs.

ROBERT E. HUGHEY, *et al*

Present: HIGGINBOTHAM, BECKER and GREENBERG, *Circuit Judges*

1. Motion by Appellants for stay of the mandate.

2. For your information the opinion was filed on February 28, 1989.

   The order denying petition for rehearing was filed on April 7, 1989.

/s/ [Illegible]
Deputy Clerk
Direct Dial 597-3143

ORDER

The foregoing Motion is granted.

By the Court,

/s/ Edward K. Becker
Circuit Judge

Dated: May 1, 1989

APPENDIX D

§ 655. Standards

(a) Promulgation by Secretary of national consensus standards and established Federal standards; time for promulgation; conflicting standards

Without regard to chapter 5 of Title 5 or to the other subsections of this section, the Secretary shall, as soon as practicable during the period beginning with the effective date of this chapter and ending two years after such date, by rule promulgate as an occupational safety or health standard any national consensus standard, and any established Federal standard, unless he determines that the promulgation of such a standard would not result in improved safety or health for specifically designated employees. In the event of conflict among any such standards, the Secretary shall promulgate the standard which assures the greatest protection of the safety or health of the affected employees.

(b) Procedure for promulgation, modification, or revocation of standards

The Secretary may by rule promulgate, modify, or revoke any occupational safety or health standard in the following manner:

(1) Whenever the Secretary, upon the basis of information submitted to him in writing by an interested person, a representative of any organization of employers or employees, a nationally recognized standards-producing organization, the Secretary of Health and Human Services, the National Institute for Occupational Safety and Health, or a State or political subdivision, or on the basis of information developed by the Secretary or otherwise available to him, determines that a rule should be promulgated in order to serve the objectives of this chapter, the Secretary may request the recommendations of an

advisory committee appointed under section 656 of this title. The Secretary shall provide such an advisory commitee with any proposals of his own or of the Secretary of Health and Human Services, together with all pertinent factual information developed by the Secretary or the Secretary of Health and Human Services, or otherwise available, including the results of research, demonstrations, and experiments. An advisory committee shall submit to the Secretary its recommendations regarding the rule to be promulgated within ninety days from the date of its appointment or within such longer or shorter period as may be prescribed by the Secretary, but in no event for a period which is longer than two hundred and seventy days.

(2) The Secretary shall publish a proposed rule promulgating, modifying, or revoking an occupational safety or health standard in the Federal Register and shall afford interested persons a period of thirty days after publication to submit written data or comments. Where an advisory committee is appointed and the Secretary determines that a rule should be issued, he shall publish the proposed rule within sixty days after the submission of the advisory committee's recommendations or the expiration of the period prescribed by the Secretary for such submission.

(3) On or before the last day of the period provided for the submission of written data or comments under paragraph (2), any interested person may file with the Secretary written objections to the proposed rule, stating the grounds therefor and requesting a public hearing on such objections. Within thirty days after the last day for filing such objections, the Secretary shall publish in the Federal Register a notice specifying the occupational safety or health standard to which objections have been

filed and a hearing requested, and specifying a time and place for such hearing.

(4) Within sixty days after the expiration of the period provided for the submission of written data or comments under paragraph (2), or within sixty days after the completion of any hearing held under paragraph (3), the Secretary shall issue a rule promulgating, modifying, or revoking an occupational safety or health standard or make a determination that a rule should not be issued. Such a rule may contain a provision delaying its effective date for such period (not in excess of ninety days) as the Secretary determines may be necessary to insure that affected employers and employees will be informed of the existence of the standard and of its terms and that employers affected are given an opportunity to familiarize themselves and their employees with the existence of the requirements of the standard.

(5) The Secretary, in promulgating standards dealing with toxic materials or harmful physical agents under this subsection, shall set the standard which most adequately assures, to the extent feasible, on the basis of the best available evidence, that no employee will suffer material impairment of health or functional capacity even if such employee has regular exposure to the hazard dealt with by such standard for the period of his working life. Development of standards under this subsection shall be based upon research, demonstrations, experiments, and such other information as may be appropriate. In addition to the attainment of the highest degree of health and safety protection for the employee, other considerations shall be the latest available scientific data in the field, the feasibility of the standards, and experience gained under this and other health and safety laws. Whenever practicable,

the standard promulgated shall be expressed in terms of objective criteria and of the performance desired.

(6) (A) Any employer may apply to the Secretary for a temporary order granting a variance from a standard or any provision thereof promulgated under this section. Such temporary order shall be granted only if the employer files an application which meets the requirements of clause (B) and establishes that (i) he is unable to comply with a standard by its effective date because of unavailability of professional or technical personnel or of materials and equipment needed to come into compliance with the standard or because necessary construction or alteration of facilities cannot be completed by the effective date, (ii) he is taking all available steps to safeguard his employees against the hazards covered by the standard, and (iii) he has an effective program for coming into compliance with the standard as quickly as practicable. Any temporary order issued under this paragraph shall prescribe the practices, means, methods, operations, and processes which the employer must adopt and use while the order is in effect and state in detail his program for coming into compliance with the standard. Such a temporary order may be granted only after notice to employees and an opportunity for a hearing: *Provided*, That the Secretary may issue one interim order to be effective until a decision is made on the basis of the hearing. No temporary order may be in effect for longer than the period needed by the employer to achieve compliance with the standard or one year, whichever is shorter, except that such an order may be renewed not more than twice (I) so long as the requirements of this paragraph are met and (II) if an application for renewal is filed at least 90 days prior to the expiration date of the

order. No interim renewal of an order may remain in effect for longer than 180 days.

(B) An application for a temporary order under this paragraph (6) shall contain:

(i) a specification of the standard or portion thereof from which the employer seeks a variance,

(ii) a representation by the employer, supported by representations from qualified persons having firsthand knowledge of the facts represented, that he is unable to comply with the standard or portion thereof and a detailed statement of the reasons therefor,

(iii) a statement of the steps he has taken and will take (with specific date) to protect employees against the hazard covered by the standard,

(iv) a statement of when he expects to be able to comply with the standard and what steps he has taken and what steps he will take (with dates specified) to come into compliance with the standard, and

(v) a certification that he has informed his employees of the application by giving a copy thereof to their authorized representative, posting a statement giving a summary of the application and specifying where a copy may be examined at the place or places where notices to employees are normally posted, and by other appropriate means.

A description of how employees have been informed shall be contained in the certification. The information to employees shall also inform them of their right to petition the Secretary for a hearing.

(C) The Secretary is authorized to grant a variance from any standard or portion thereof whenever he determines, or the Secretary of Health and Human Services certifies, that such varience is necessary to permit an employer to participate in an experiment approved by him or the Secretary of Health and Human Services designed to demonstrate or validate new and improved techniques to safeguard the health or safety of workers.

(7) Any standard promulgated under this subsection shall prescribe the use of labels or other appropriate forms of warning as are necessary to insure that employees are apprised of all hazards to which they are exposed, relevant symptoms and appropriate emergency treatment, and proper conditions and precautions of safe use or exposure. Where appropriate, such standard shall also prescribe suitable protective equipment and control or technological procedures to be used in connection with such hazards and shall provide for monitoring or measuring employee exposure at such locations and intervals, and in such manner as may be necessary for the protection of employees. In addition, where appropriate, any such standard shall prescribe the type and frequency of medical examinations or other tests which shall be made available, by the employer or at his cost, to employees exposed to such hazards in order to most effectively determine whether the health of such employees is adversely affected by such exposure. In the event such medical examinations are in the nature of research, as determined by the Secretary of Health and Human Services, such examinations may be furnished at the expense of the Secretary of Health and Human Services. The results of such examinations or tests shall be furnished only to the Secretary or the Secretary of Health and Human Services, and, at the request of the employee,

to his physician. The Secretary, in consultation with the Secretary of Health and Human Services, may by rule promulgated pursuant to section 553 of Title 5, make appropriate modifications in the foregoing requirements relating to the use of labels or other forms of warning, monitoring or measuring, and medical examinations, as may be warranted by experience, information, or medical or technological developments acquired subsequent to the promulgation of the relevant standard.

(8) Whenever a rule promulgated by the Secretary differs substantially from an existing national consensus standard, the Secretary shall, at the same time, publish in the Federal Register a statement of the reasons why the rule as adopted will better effectuate the purposes of this chapter than the national consensus standard.

(c) Emergency temporary standards

(1) The Secretary shall provide, without regard to the requirements of chapter 5 of Title 5, for an emergency temporary standard to take immediate effect upon publication in the Federal Register if he determines (A) that employees are exposed to grave danger from exposure to substances or agents determined to be toxic or physically harmful or from new hazards, and (B) that such emergency standard is necessary to protect employees from such danger.

(2) Such standard shall be effective until superseded by a standard promulgated in accordance with the procedures prescribed in paragraph (3) of this subsection.

(3) Upon publication of such standard in the Federal Register the Secretary shall commence a proceeding in accordance with subsection (b) of this section, and the standard as published shall also serve as a proposed rule for the proceeding. The Secretary shall promulgate a

standard under this paragraph no later than six months after publication of the emergency standard as provided in paragraph (2) of this subsection.

(d) Variance from standards; procedure

Any affected employer may apply to the Secretary for a rule or order for a variance from a standard promulgated under this section. Affected employees shall be given notice of each such application and an opportunity to participate in a hearing. The Secretary shall issue such rule or order if he determines on the record, after opportunity for an inspection where appropriate and a hearing, that the proponent of the variance has demonstrated by a preponderance of the evidence that the conditions, practices, means, methods, operations, or processes used or proposed to be used by an employer will provide employment and places of employment to his employees which are as safe and healthful as those which would prevail if he complied with the standard. The rule or order so issued shall prescribe the conditions the employer must maintain, and the practices, means, methods, operations, and processes which he must adopt and utilize to the extent they differ from the standard in question. Such a rule or order may be modified or revoked upon application by an employer, employees, or by the Secretary on his own motion, in the manner prescribed for its issuance under this subsection at any time after six months from its issuance.

(e) Statement of reasons for Secretary's determinations; publication in Federal Register

Whenever the Secretary promulgates any standard, makes any rule, order, or decision, grants any exemption or extension of time, or compromises, mitigates, or settles any penalty assessed under this chapter, he shall include a statement of the reasons for such action, which shall be published in the Federal Register.

(f) Judicial review

Any person who may be adversely affected by a standard issued under this section may at any time prior to the sixtieth day after such standard is promulgated file a petition challenging the validity of such standard with the United States court of appeals for the circuit wherein such person resides or has his principal place of business, for a judicial review of such standard. A copy of the petition shall be forthwith transmitted by the clerk of the court to the Secretary. The filing of such petition shall not, unless otherwise ordered by the court, operate as a stay of the standard. The determinations of the Secretary shall be conclusive if supported by substantial evidence in the record considered as a whole.

(g) Priority fo restablishment of standards

In determining the priority for establishing standards under this section, the Secretary shall give due regard to the urgency of the need for mandatory safety and health standards for particular industries, trades, crafts, occupations, businesses, workplaces or work environments. The Secretary shall also give due regard to the recommendations of the Secretary of Health and Human Services regarding the need for mandatory standards in determining the priority for establishing such standards.

(Pub.L. 91-596, § 6, Dec. 29, 1970, 84 Stat. 1593; Pub.L. 96-88, Title V, § 509(b), Oct. 17, 1979, 93 Stat. 695.)

§ 667. State jurisdiction and plans

(a) Assertion of State standards in absence of applicable Federal standards

Nothing in this chapter shall prevent any State agency or court from asserting jurisdiction under State law over any occupational safety or health issue with respect to which no standrad is in effect under section 655 of this title.

(b) Submission of State plan for development and enforcement of State standards to preempt applicable Federal standards

Any State which, at any time, desires to assume responsibility for development and enforcement therein of occupational safety and health standards relating to any occupational safety or health issue with respect to which a Federal standard has been promulgated under section 655 of this title shall submit a State plan for the development of such standards and their enforcement.

(c) Conditions for approval of plan

The Secretary shall approve the plan submitted by a State under subsection (b) of this section, or any modification thereof, if such plan in his judgment—

(1) designates a State agency or agencies as the agency or agencies responsible for administering the plan throughout the State,

(2) provides for the development and enforcement of safety and health standards relating to one or more safety or health issues, which standards (and the enforcement of which standards) are or will be at least as effective in providing safe and healthful employment and places of employment as the standards promulgated under section 655 of this title which relate to the same issues, and which standards, when applicable to products which are distributed or used in interstate, commerce, are required by compelling local conditions and do not unduly burden interstate commerce,

(3) provides for a right of entry and inspection of all workplaces subject to this chapter which is at least as effective as that provided in section 657 of this title, and includes a prohibition on advance notice of inspections,

(4) contains satisfactory assurances that such agency or agencies have or will have the legal authority and qualified personnel necessary for the enforcement of such standards,

(5) gives satisfactory assurances that such State will devote adequate funds to the administration and enforcement of such standards,

(6) contains satisfactory assurances that such State will, to the extent permitted by its law, establish and maintain an effective and comprehensive occupational safety and health program applicable to all employees of public agencies of the State and its political subdivisions, which program is as effective as the standards contained in an approved plan,

(7) requires employers in the State to make reports to the Secretary in the same manner and to the same extent as if the plan were not in effect, and

(8) provides that the State agency will make such reports to the Secretary in such form and containing such information, as the Secretary shall from time to time require.

(d) Rejection of plan; notice and opportunity for hearing

If the Secretary rejects a plan submitted under subsection (b) of this section, he shall afford the State submitting the plan due notice and opportunity for a hearing before so doing.

(e) Discretion of Secretary to exercise authority over comparable standards subsequent to approval of State plan; duration; retention of jurisdiction by Secretary upon determination of enforcement of plan by State

After the Secretary approves a State plan submitted under subsection (b) of this section, he may, but shall not be required to, exercise his authority under sections

657, 658, 659, 662, and 666 of this title with respect to comparable standards promulgated under section 655 of this title, for the period specified in the next sentence. The Secretary may exercise the authority referred to above until he determines, on the basis of actual operations under the State plan, that the criteria set forth on subsection (c) of this section are being applied, but he shall not make such determination for at least three years after the plan's approval under subsection (c) of this section. Upon making the determination referred to in the preceding sentence, the provisions of sections 654 (a) (2), 657 (except for the purpose of carrying out subsection (f) of this section), 658, 659, 662, and 666 of this title, and standards promulgated under section 655 of this title, shall not apply with respect to any occupational safety or health issues covered under the plan, but the Secretary may retain jurisdiction under the above provisions in any proceeding commenced under section 658 or 659 of this title before the date of determination.

(f) Continuing evaluation by Secretary of State enforcement of approved plan; withdrawal of approval of plan by Secretary; grounds; procedure; conditions for retention of jurisdiction by State

The Secretary shall, on the basis of reports submitted by the State agency and his own inspections make a continuing evaluation of the manner in which each State having a plan approved under this section is carrying out such plan. Whenever the Secretary finds, after affording due notice and opportunity for a hearing, that in the administration of the State plan there is a failure to comply substantially with any provision of the State plan (or any assurance contained therein), he shall notify the State agency of his withdrawal of approval of such plan and upon receipt of such notice such plan shall cease to be in effect, but the State may retain jurisdiction in any case commenced before the withdrawal of the plan in

order to enforce standards under the plan whenever the issues involved do not relate to the reasons for the withdrawal of the plan.

(g) Judicial review of Secretary's withdrawal of approval or rejection of plan; jurisdiction; venue; procedure; appropriate relief; finality of judgment

The State may obtain a review of a decision of the Secretary withdrawing approval of or rejecting its plan by the United States court of appeals for the circuit in which the State is located by filing in such court within thirty days following receipt of notice of such decision a petition to modify or set aside in whole or in part the action of the Secretary. A copy of such petition shall forthwith be served upon the Secretary, and thereupon the Secretary shall certify and file in the court the record upon which the decision complained of was issued as provided in section 2112 of Title 28. Unless the court finds that the Secretary's decision in rejecting a proposed State plan or withdrawing his approval of such a plan is not supported by substantial evidence the court shall affirm the Secretary's decision. The judgment of the court shall be subject to review by the Supreme Court of the United States upon certiorari or certification as provided in section 1254 of Title 28.

(h) Temporary enforcement of State standards

The Secretary may enter into an agreement with a State under which the State will be permitted to continue to enforce one or more occupational health and safety standards in effect in such State until final action is taken by the Secretary with respect to a plan submitted by a State under subsection (b) of this section, or two years from December 29, 1970, whichever is earlier.

(Pub.L. 91-596, § 18, Dec. 29, 1970, 84 Stat. 1608.)

34:5A-1. Short title

This act shall be known and may be cited as the "Worker and Community Right to Know Act."

L.1983, c. 315, § 1, eff. Aug. 29, 1984.

34:5A-2. Legislative findings and declarations

The Legislature finds and declares that the proliferation of hazardous substances in the environment poses a growing threat to the public health, safety, and welfare; that the constantly increasing number and variety of hazardous substances, and the many routes of exposure to them make it difficult and expensive to adequately monitor and detect any adverse health effects attributable thereto; that individuals themselves are often able to detect and thus minimize effects of exposure to hazardous substances if they are aware of the identity of the substances and the early symptoms of unsafe exposure; and that individuals have an inherent right to know the full range of the risks they face so that they can make reasoned decisions and take informed action concerning their employment and their living conditions.

The Legislature further declares that local health, fire, police, safety and other government officials require detained information about the identity, characteristics, and quantities of hazardous substances used and stored in communities within their jurisdicions, in order to adequately plan for, and respond to, emergencies, and enforce compliance with applicable laws and regulations concerning these substances.

The Legislature further declares that the extent of the toxic contamination of the air, water, and land in this State has caused a high degree of concern among its residents; and that much of this concern is needlessly aggravated by the unfamiliarity of these substances to residents.

The Legislature therefore determines that it is in the public interest to establish a comprehensive program for the disclosure of information about hazardous substances in the workplace and the community, and to provide a procedure whereby residents of this State may gain access to this information.

L.1983, c. 315, § 2, eff. Aug. 29, 1984.

34:5A-3. Definitions

As used in this act:

a. "Chemical Abstracts Service number" means the unique identification number assigned by the Chemical Abstracts Service to chemicals.

b. "Chemical name" means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry or the Chemical Abstracts Service rules of nomenclature.

c. "Common name" means any designation or identification such as a code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.

d. "Container" means a receptacle used to hold a liquid, solid, or gaseous substance, including, but not limited to, bottles, pipelines, bags, barrels, boxes, cans, cylinders, drums, cartons, vessels, vats, and stationary or mobile storage tanks. "Container" shall not include process containers.

e. "Council" means the Right to Know Advisory Council created pursuant to section 18 of this act.[1]

f. "County health department" means a county health agency established pursuant to P.L.1975, c. 329 (C. 26:3A2-

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[1] Section 34:5A-18.

1 et seq.), or the office of a county clerk in a county which has not established a department.

g. "Employee representative" means a certified collective bargaining agent or an attorney whom an employee authorizes to exercise his rights to request information pursuant to the provisions of this act, or a parent or legal guardian of a minor employee.

h. "Employer" means any person or corporation in the State engaged in business operations which has a Standard Industrial Classification, as designated in the Standard Industrial Classification Manual prepared by the federal Office of Management and Budget, within the following Major Group Numbers, Group Numbers, or Industry Numbers, as the case may be: Major Group Number 07 (Agricultural Services), only Industry Number 0782—Lawn and Garden Services; Major Group Numbers 20 through 39 inclusive (Manufacturing Industries); Major Group Number 45 (Transportation by Air), only Industry Number 4511—Air Transportation, Certified Carriers, and Group Number 458—Air Transportation Services; Major Group Number 46 (Pipelines, Except Natural Gas); Major Group Number 47 (Transportation Services), only Group Numbers 471—Freight Forwarding, 474—Rental of Railroad Cars, and 478—Miscellaneous Services Incidental to Transportation; Major Group Number 48 (Communication), only Group Numbers 481—Telephone Communication, and 482—Telegraph Communication; Major Group Number 49 (Electric, Gas and Sanitary Services); Major Group Number 50 (Wholesale Trade—Durable Goods), only Industry Numbers 5085—Industrial Suppliers, 5087—Service Establishment Equipment and Supplies, and 5093—Scrap and Waste Materials; Major Group Number 51 (Wholesale Trade, Nondurable Goods), only Group Numbers 512—Drugs, Drug Proprietaries and Druggist's Sundries, 516—Chemicals and Allied Products, 517—Petroleum and Petroleum Products, 518—Beer, Wine and

Distilled Alcoholic Beverages, and 519—Miscellaneous Nondurable Goods; Major Group Number 55 (Automobile Dealers and Gasoline Service Stations), only Group Numbers 551—Motor Vehicle Dealers (New and Used), 552—Motor Vehicle Dealers (Used Only), and 554—Gasoline Service Stations; Major Group Number 72 (Personal Services), only Industry Numbers 7216—Dry Cleaning Plants, Except Rug Cleaning, 7217—Carpet and Upholstery Cleaning, and 7218—Industrial Launderers; Major Group Number 73 (Business Services), only Industry Number 7397 Commercial Testing Laboratories; Major Group Number 75 (Automotive Repair, Services, and Garages), only Group Number 753—Automotive Repair Shops; Major Group Number 76 (Miscellaneous Repair Services), only Industry Number 7692—Welding Repair; Major Group Number 80 (Health Services), only Group Number 806—Hospitals; and Major Group Number 82 (Educational Services), only Group Number 821—Elementary and Secondary Schools and 822—Colleges and Universities, and Industry Number 8249—Vocational Schools. Except for the purposes of section 26 of this act,[2] "employer" means the State and local governments, or any agency, authority, department, bureau, or instrumentality thereof.

i. "Environmental hazardous substance" means any substance on the environmental hazardous substance list.

j. "Environmental hazardous substance list" means the list of environmental hazardous substances developed by the Department of Environmental Protection pursuant to section 4 of this act.[3]

k. "Environmental survey" means a written form prepared by the Department of Environmental Protection and transmitted to an employer, on which the employer

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[2] Section 34:5A-26.

[3] Section 34:5A-4.

shall provide certain information concerning each of the environmental hazardous substances at his facility, including, but not limited to, the following:

(1) The chemical name and Chemical Abstracts Service number of the environmental hazardous substance;

(2) A description of the use of the environmental hazardous substance at the facility;

(3) The quantity of the enviromnental hazardous substance produced at the facility;

(4) The quantity of the environmental hazardous substance brought into the facility;

(5) The quantity of the environmental hazardous substance consumed at the facility;

(6) The quantity of the environmental hazardous substance shipped out of the facility as or in products;

(7) The maximum inventory of the environmental hazardous substance stored at the facility, the method of storage, and the frequency and methods of transfer;

(8) The total stack or point-source emissions of the environmental hazardous substance;

(9) The total estimated fugitive or nonpoint-source emissions of the environmental hazardous substance;

(10) The total discharge of the environmental hazardous substance into the surface or groundwater, the treatment methods, and the raw wastewater volume and loadings;

(11) The total discharge of the environmental hazardous substance into publicly owned treatment works;

(12) The quantity, and methods of disposal, of any wastes containing an environmental hazardous substance, the method of onsite storage of these wastes, the location or locations of the final disposal site for these wastes, and the identity of the hauler of the wastes.

l. "Facility" means the building, equipment and contiguous area at a single location used for the conduct of business. Except for the purposes of subsection c of section 13, section 14, and subsection b. of section 25 of this act,[4] "facility" shall not include a research and development laboratory.

m. "Hazardous substance" means any substance, or substance contained in a mixture, included on the workplace hazardous substance list developed by the Department of Health pursuant to section 5 of this act,[5] introduced by an employer to be used, studied, produced, or otherwise handled at a facility. "Hazardous substance" shall not include:

(1) Any article containing a hazardous substance if the hazardous substance is present in a solid form which does not pose any acute or chronic health hazard to an employee exposed to it;

(2) Any hazardous substance constituting less than 1% of a mixture unless the hazardous substance is present in an aggregate amount of 500 pounds or more at a facility;

(3) Any hazardous substance which is a special health hazard substance constituting less than the threshold percentage established by the Department of Health for that special health hazard substance when present in a mixture; or

(4) Any hazarduos substance present in the same form and concentration as a product packaged for distribution and use by the general public to which an employee's exposure during handling is not significantly greater

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[4] Sections 34:5A-13, 34:5A-14, 34:5A-25.

[5] Section 34:5A-5.

than a consumer's exposure during the principal use of the toxic substance.

n. "Hazardous substance fact sheet" means a written document prepared by the Department of Health for each hazardous substance and transmitted by the department to employers pursuant to the provisions of this act, which shall include, but not be limited to, the following information:

(1) The chemical name, the Chemical Abstracts Service number, the trade name, and common names of the hazardous substance;

(2) A reference to all relevant information on the hazardous substance from the most recent edition of the National Institute for Occupational Safety and Health's Registry of Toxic Effects of Chemical Substances;

(3) The hazardous substance's solubility in water, vapor pressure at standard conditions of temperature and pressure, and flash point;

(4) The hazard posed by the hazardous substance, including its toxicity, carcinogenicity, mutagenicity, teratogenicity, flammability, explosiveness, corrosivity and reactivity, including specific information on its reactivity with water;

(5) A description, in nontechnical language, of the acute and chronic health effects of exposure to the hazardous substance, including the medical conditions that might be aggravated by exposure, and any permissible exposure limits established by the federal Occupational Safety and Health Administration;

(6) The potential routes and symptoms of exposure to the hazardous substance;

(7) The proper precautions, practices, necessary personnel protective equipment, recommended engineering controls, and any other necessary and appropriate measures for the safe handling of the hazardous substance,

including specific information on how to extinguish or control a fire that involves the hazardous substance; and

(8) The appropriate emergency and first aid procedures for spills, fires, potential explosions, and accidental or unplanned emissions involving the hazardous substance.

o. "Label" means a sign, emblem, sticker, or marker affixed to or stenciled onto a container listing the information required pursuant to section 14 of this act.[6]

p. "Mixture" means a combination of two or more substances not involving a chemical reaction.

q. "Process container" means a container, excluding a pipeline, the content of which is changed frequently; a container of 10 gallons or less in capacity, into which substances are transferred from labeled containers, and which is intended only for the immediate use of the employee who performs the transfer; a container on which a label would be obscured by heat, spillage or other factors; or a test tube, beaker, vial, or other container which is routinely used and reused.

r. "Research and development laboratory" means a specially designated area used primarily for research, development, and testing activity, and not primarily involved in the production of goods for commercial sale, in which hazardous substances or environmental hazardous substances are used by or under the direct supervision of a technically qualified person.

s. "Special health hazard substance" means any hazardous substance on the special health hazard substance list.

t. "Special health hazard substance list" means the list of special health hazard substances developed by the Department of Health pursuant to section 5 of this act for which an employer may not make a trade secret claim.

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[6] Section 34:5A-14.

u. "Trade secret" means any formula, plan, pattern, process, production data, information, or compilation of information, which is not patented, which is known only to an employer and certain other individuals, and which is used in the fabrication and production of an article of trade or service, and which gives the employer possessing it a competitive advantage over businesses who do not possess it, or the secrecy of which is certified by an appropriate official of the federal government as necessary for national defense purposes. The chemical name and Chemical Abstracts Service number of a substance shall be considered a trade secret only if the employer can establish that the substance is unknown to competitors. In determining whether a trade secret is valid pursuant to section 15 of this act,[7] the Department of Health, or the Department of Environmental Protection, as the case may be, shall consider material provided by the employer concerning (1) the extent to which the information for which the trade secret claim is made is known outside the employer's business; (2) the extent to which the information is known by employees and others involved in the employer's business; (3) the extent of measures taken by the employer to guard the secrecy of the information; (4) the value of the information, to the employer or the employer's competitor; (5) the amount of effort or money expended by the employer in developing the information; and (6) the ease or difficulty with which the information could be disclosed by analytical techniques, laboratory procedures, or other means.

v. "Trade secret registry number" means a code number temporarily or permanently assigned to the identity of a substance in a container by the Department of Health pursuant to section 15 of this act.

w. "Trade secret claim" means a written request, made by an employer pursuant to section 15 of this act, to with-

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[7] Section 34:5A-15.

hold the public disclosure of information on the grounds that the disclosure would reveal a trade secret.

x. "Workplace hazardous substance list" means the list of hazardous substances developed by the Department of Health pursuant to section 5 of this act.

y. "Workplace survey" means a written document, prepared by the Department of Health and completed by an employer pursuant to this act, on which the employer shall report each hazardous substance present at his facility.

L.1983, c. 315, § 3, eff. Aug. 29, 1984. Amended by L.1985, c. 543, § 1.

34:5A-4. Environmental hazardous substance list; environmental survey; Spanish translation

a. The Department of Environmental Protection shall develop an environmental hazardous substance list which shall include, but not be limited to, substances used, manufactured, stored, packaged, repackaged, or disposed of or released into the environment of the State which, in the department's determination, may be linked to the incidence of cancer; genetic mutations; physiological malfunctions, including malfunctions in reproduction; and other diseases; or which, by virtue of their physical properties, may pose a threat to the public health and safety. The department shall base the environmental hazardous substance list on the list of substances developed and used by the department for the purposes of the Industrial Survey Project, established pursuant to P.L. 1970, c. 33 (C. 13:1D-1 et seq.) and P.L. 1977, c. 74 (C. 58:10A-1 et seq.), and may include other substances which the department, based on documented scientific evidence, determines pose a threat to the public health and safety.

b. The department shall develop an environmental survey, which shall be designed to enable employers to report information about environmental hazardous substances at their facilities.

c. The department shall prepare and, upon request, make available to employers, county health departments, or the public a Spanish translation of the environmental survey. The department shall also prepare and make available a Spanish translation of any written material prepared by the department to inform the public of the information available pursuant to the provisions of this act.

d. Three months prior to the effective date of this act the department shall adopt, pursuant to the "Administrative Procedure Act," P.L. 1968, c. 410 (C. 52:14B-1 et seq.), the environmental hazardous substance list.

L.1983, c. 315, § 4, eff. Aug. 29, 1984.

34:5A-5. Workplace hazardous substance list; special health hazard substance list; workplace survey; hazardous substance fact sheet; Spanish translation

a. The Department of Health shall develop a workplace hazardous substance list which shall include:

(1) Any substance or substance contained in a mixture regulated by the federal Occupational Safety and Health Administration under Title 29 of the Code of Federal Regulations, Part 1910, subpart z;

(2) Any environmental hazardous substance; and

(3) Any other substance which the department, based on documented scientific evidence, determines poses a threat to the health or safety of an employee.

b. The department shall develop a special health hazard substance list comprising hazardous substances which, because of their known carcinogenicity, mutagenicity, teratogenicity, flammability, explosiveness, corrosivitiy, or reactivity pose a special hazard to health and safety, and for which an employer shall not be permitted to make a trade secret claim.

c. The department shall develop a workplace survey designed to facilitate the reporting by employers of those hazardous substances present at their facilities. The workplace survey shall include a copy of the special health hazard substance list.

d. The department shall develop a hazardous substance fact sheet for each hazardous substance on the workplace hazardous substance list.

e. The department shall prepare and, upon request, make available to employers, county health departments, and the public a Spanish translation of the workplace survey and each hazardous substance fact sheet. The department shall also prepare and make available a Spanish translation of any written material prepared by the department to inform employees of their rights under this act.

f. Three months prior to the effective date of this act, the department shall adopt, pursuant to the "Administrative Procedure Act," P.L. 1968, c. 410 (C.52:14B-1 et seq.), a workplace hazardous substance list.

L.1983, c. 315, § 5, eff. Aug. 29, 1984.

34:5A-6. Distribution of workplace and environmental surveys to employer

a. Within five days of the effective date of this act, the Department of Health shall transmit copies of the workplace survey to the Department of Labor. Upon receipt of the workplace survey, the Department of Labor shall transmit the workplace survey to each employer in the State.

b. Within five days of the effective date of this act, the Department of Environmental Protection shall transmit an environmental survey to each employer whose business activities, according to criteria developed by the department, warrant the reporting of the information re-

quired on the environmental survey. The department may transmit an environmental survey to every employer.

L.1983, c. 315, § 6, eff. Aug. 29, 1984.

34:5A-7. Completion and return of surveys by employer; identification of hazardous substance

a. Except as otherwise provided in section 15 of this act,[1] an employer shall have until October 30, 1985, or within 90 days of the employer's receipt of the workplace survey, whichever is later, to complete the survey and transmit a copy of the completed survey to the Department of Health, the health department of the county in which the employer's facility is located, the local fire department, and the local police department. If an employer has reason to believe that a mixture present at his facility contains a hazardous substance as a component, but is unable to obtain from the manufacturer or supplier of the mixture the chemical names and Chemical Abstracts Service numbers of the components of the mixture, he shall list the mixture by its common name in the space provided on the survey. The department shall have the responsibility to obtain the chemical names and Chemical Abstracts Service numbers of the components of the mixture so listed, and, upon obtaining this information, shall transmit it to the employer along with any appropriate hazardous substance fact sheet or sheets and directions to the employer on how to communicate this information to his employees.

b. Except as otherwise provided in section 15 of this act, an employer shall have until October 30, 1985, or within 90 days of the employer's receipt of the environmental survey, whichever is later, to complete the survey and transmit a copy of the completed survey to the Department of Environmental Protection and the health department of the county in which the employer's facility

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[1] Section 34:5A-15.

is located, and pertinent sections of the survey to the local fire department and the local police department.

L.1983, c. 315, § 7, eff. Aug. 29, 1984. Amended by L.1985, c. 64, § 1; L.1985, c. 216, § 1.

34:5A-8. Transmission of hazardous substance fact sheet to employer; employers exempt from act

a. Upon receipt of a completed workplace survey from an employer, the Department of Health shall transmit to that employer a hazardous substance fact sheet for each hazardous substance reported by the employer on the workplace survey. If an employer makes a trade secret claim for information on the workplace survey pursuant to section 15 of this act,[1] the department shall transmit a hazardous substance fact sheet for that substance with the identity of the substance concealed.

b. Any employer whose workplace survey transmitted to the Department of Health pursuant to section 7 of this act[2] indicates that no hazardous substances are present at the facility shall be exempt from the provisions of this act for that facility, except for the requirement to annually update the workplace survey pursuant to section 10 of this act,[3] and except for the provisions of section 33 of this act.[4] Any employer exempted from the provisions of this act pursuant to this subsection who transmits to the Department of Health an update of the workplace survey which indicates that a hazardous substance is present at the employer's facility shall immediately be subject to the provisions of this act.

L.1983, c. 315, § 8, eff. Aug. 29, 1984. Amended by L.1985, c. 534, § 1, eff. Jan. 21, 1986.

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[1] Section 34:5A-15.

[2] Section 34:5A-7.

[3] Section 34:5A-10.

[4] Section 34:5A-33.

34:5A-9. Environmental surveys; file; clarifying information; update; request for copy

a. The Department of Environmental Protection shall maintain a file of all completed environmental surveys received from employers. Each environmental survey received by the department shall be retained by the department for 30 years.

b. The department may require an employer to submit information clarifying any statement made on the environmental survey. The department, subject to the provisions of section 15 of this act [1] if applicable, shall transmit this clarifying information to the appropriate county health department, local fire department, and local police department as it deems necessary.

c. The department shall require every employer to update the environmental survey for his facility every other year. If there is any significant change during a non-reporting year in the information reported on his environmental survey, the employer shall inform the department of the change. The department may require an employer to update the environmental survey for his facility every year.

d. Any person may request in writing from the department a copy of an environmental survey for a facility, and the department shall transmit any survey so requested within 30 days of the request therefor.

L.1983, c. 315, § 9, eff. Aug. 29, 1984.

34:5A-10. Workplace surveys and hazardous substance fact sheets; file; update; copies of employee health and exposure records; requests for copies

a. The Department of Health shall maintain a file of all completed workplace surveys received from employers. Each workplace survey received shall be retained by the

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[1] Section 34:5A-15.

department for 30 years. The department shall also retain for 30 years each hazardous substance fact sheet.

b. The department shall require every employer to annually update the workplace survey for his facility, and shall supply each employer with any necessary additional hazardous substance fact sheets.

c. Upon request by the department, an employer shall provide the department with copies of employee health and exposure records, including those maintained for, and supplied to, the federal government.

d. Any person may request in writing from the department a copy of a workplace survey for a facility, together with the appropriate hazardous substance fact sheets, and the department shall transmit any material so requested within 30 days of the request therefor. Any request by an employee for material pertaining to the facility where he is employed made pursuant to this subsection shall be treated by the department as confidential.

L.1983, c. 315, § 10, eff. Aug. 29, 1984.

34:5A-11. Request for Spanish translation

a. An employer shall, upon request, provide an employee whose native language is Spanish with a Spanish translation of a workplace survey, hazardous substance fact sheet, and, if applicable, an environmental survey obtained from the Department of Health or the Department of Environmental Protection, as the case may be. An employer shall, upon request, provide employees whose native language is Spanish with the education and training program required pursuant to section 13 of this act [1] in Spanish.

b. A county health department shall, upon request, provide copies of the environmental survey and the work-

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[1] Section 34:5A-13.

place survey in a Spanish translation provided by the Department of Health and Department of Environmental Protection.

L.1983, c. 315, § 11, eff. Aug. 29, 1984.

34:5A-12. Employer's central file; posting of notice; distribution of literature on employee rights; employee access to information

Every employer shall establish and maintain a central file at his facility in which he shall retain a workplace survey for the facility, appropriate hazardous substance fact sheets, and, if applicable, a copy of the environmental survey for the facility. Every employer shall post on bulletin boards readily accessible to employees a notice of the availability of the information in the file. Every employer employing employees whose native language is Spanish shall also post the notice in Spanish. Every employer shall supply employees with any material designed and provided by the Department of Health, the Department of Environmental Protection, or the Department of Labor to inform employees of their rights under this act. An employer shall provide an employee with access to a workplace survey, appropriate hazardous substance fact sheets, and, if applicable, an environmental survey, within five working days of a request therefor.

L.1983, c. 315, § 12, eff. Aug. 29, 1984.

34:5A-13. Employee education and training program

a. Every employer shall have until October 30, 1985 to establish an education and training program for his employees, which shall be designed to inform employees in writing and orally of the nature of the hazardous substances to which they are exposed in the course of their employment and the potential health risks which the hazardous substances pose, and to train them in the proper

and safe procedures for handling the hazardous substances under all circumstances. An employer shall provide his employees with the program not later than December 31, 1985, and annually thereafter. Any person who becomes an employee after the conclusion of the initial program shall be provided with the program within the first month of employment. Prior to entering an employment agreement with a prospective employee an employer shall notify a prospective employee of the availability of workplace surveys and appropriate hazardous substance fact sheets for the facility at which the prospective employee will be employed; except that this notification requirement shall not be applicable to employers before December 31, 1985.

b. Any employer who has established an employee education and training program for hazardous substances prior to the effective date of this act may request the Department of Health to certify that education and training program, which certification shall constitute compliance with subsection a. of this section.

c. Every employer shall establish an education and training program for his employees who work in a research and development laboratory, which shall be designed to inform employees in writing and orally of the nature of the hazardous substances to which they are exposed in the course of their employment and the potential health risks which the hazardous substances pose, and to train them in the proper and safe procedures for handling the hazardous substances under all circumstances. An employer shall provide his employees with the program not later than December 31, 1985, and annually thereafter. Any person who becomes an employee after the conclusion of the initial program shall be provided with the program within the first month of employment.

L.1983, c. 315, § 13, eff. Aug. 29, 1984. Amended by L.1985, c. 64, § 2; L.1985, c. 216, § 2.

34:5A-14. Labelling of containers containing hazardous substances and pipelines; code or number system for containers in research and development laboratories; exemptions

a. Every employer shall have until October 30, 1985 to take any action necessary to assure that every container at his facility containing a hazardous substance shall bear a label indicating the chemical name and Chemical Abstracts Service number of the hazardous substance or the trade secret registry number assigned to the hazardous substance. Employers may label containers in a research and development laboratory by means of a code or number system, if the code or number system will enable an employee to readily make a cross-reference to a hazardous substance fact sheet which will provide the employee with the chemical name and Chemical Abstracts Service number of the hazardous substance contained in the container, or the trade secret registry number assigned to the hazardous substance. The code or number system shall be designed to allow the employee free and ready access at all times to the chemical name and Chemical Abstracts Service number of the hazardous substance in the container, shall be designed to allow the employee access to this information without the permission or assistance of management, and shall be available to the employee at close proximity to his specific job location or locations. Employers shall be required to label pipelines only at the valve or valves located at the point at which a hazardous substance enters a facility's pipeline system, and at normally operated valves, outlets, vents, drains and sample connections designed to allow the release of a hazardous substance from the pipeline.

b. Within two years of the effective date of this act, every employer shall take any action necessary to assure that every container at his facility bears a label indicating the chemical name and Chemical Abstracts Service number of the substance in the container, except as pro-

vided in subsection d. of this section, or the trade secret registry number assigned to the substance. Employers may label containers in a research and development laboratory by means of a code or number system, if the code or number system will enable an employee to readily make a cross-reference to documentary material retained on file by the employer at the facility which will provide the employee with the chemical name and Chemical Abstracts Service number of the substance contained in the container, except as provided in subsection d. of this section, or the trade secret registry number assigned to the substance. The code or number system shall be designed to allow the employee free and ready access at all times to the chemical name and Chemical Abstracts Service number of the substance in the container, shall be designed to allow the employee access to this information without the permission or assistance of management, and shall be available to the employee at close proximity to his specific job location or locations. If a container contains a mixture, an employer shall be required to insure that label identify the chemical names and Chemical Abstracts Service numbers, except as provided in subsection d. of this section, or the trade secret registry numbers, of the five most predominant substances contained in the mixture. The provisions of this subsection shall not apply to any substance constituting less than 1% of a mixture unless the substance is present at the facility in an aggregate amount of 500 pounds or more. Employers shall be required to label pipelines only at the valve or valves located at the point at which a substance enters a facility's pipeline system, and at normally operated valves, outlets, vents, drains and sample connections designed to allow the release of a substance from the pipeline. One year after the effective date of this act the Department of Health shall establish criteria for containers which, because of the finished and durable characteristics of their contents, shall be exempt from the provisions of this subsection. These standards shall be consistent with the in-

tent of this subsection to provide for the labeling of every container which may contain a substance which is potentially hazardous.

c. The labeling requirements of subsections a. and b. of this section shall not apply to containers labeled pursuant to the "Federal Insecticide, Fungicide, and Rodenticide Act," 61 Stat. 163 (7 U.S.C. § 121 et al.)[1]. The Department of Health may, by rule and regulation, certify containers labeled pursuant to any other federal act as labeled in compliance with the provisions of this section.

d. One year after the effective date of this act the Department of Health shall adopt, pursuant to the "Administrative Procedure Act," P.L.1968, c. 410 (C. 52:14B-1 et seq.), a list of substances the containers of which may be labeled with the common names and Chemical Abstracts Service numbers of their contents. The department shall include on the list adopted pursuant to this subsection only substances which are widely recognized by their common names. An employer shall provide the chemical name of a substance in a container labeled pursuant to this subsection within five working days of the request therefor.

L.1983, c. 315, § 14, eff. Aug. 29, 1984. Amended by L.1985, c. 64, § 3; L.1985, c. 216, § 3.

34:5A-15. Trade secret claim

a. If an employer believes that disclosing information required by this act will reveal a trade secret, he may file with the appropriate department a trade secret claim as herein provided. As used in this section, "department" means either the Department of Health or Department of Environmental Protection, as the case may be.

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[1] Repealed; see, now, 7 U.S.C.A. § 136 et seq.

b. If an employer claims that disclosing information on either the workplace survey or the environmental survey would reveal a trade secret, he shall file with the appropriate department a trade secret claim within 90 days of receipt of the survey. An employer making a trade secret claim shall submit two copies of the survey to the department, one with the information for which a trade secret claim is being made concealed, and one in an envelope marked "Confidential" containing the information for which a trade secret claim is being made, which the department, during the pendency of the trade secret claim, shall keep in a locked file or room. On the copies of the survey sent to the county health department, local fire department, and local police department, and retained on file at the facility, the employer shall conceal the information for which he is making a trade secret claim.

c. If an employer claims that labeling a container pursuant to the provisions of section 14 of his act [1] would reveal a trade secret, he shall file a trade secret claim with the Department of Health. Upon receipt of the trade secret claim, the department shall assign a trade secret registry number to the claim, and transmit the trade secret registry number to the employer. Upon receipt of the trade secret registry number, the employer shall affix the trade secret registry number to each container containing a substance for which the trade secret claim was made.

d. The department shall act to make a determination on the validity of a trade secret claim when a request is made pursuant to the provisions of this act for the disclosure of the information for which the trade secret claim was made, or at any time that the department deems appropriate. Upon making a determination on the

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[1] Section 34:5A-14.

validity of a trade secret claim, the department shall inform the employer of the determination by certified mail. If the department determines that the employer's trade secret claim is not valid, the employer shall have 45 days from the receipt of the department's determination to file with the department a written request for an administrative hearing on the determination. If the employer does not file such a request within 45 days, the department shall take action to provide that the information for which the trade secret claim was made be disclosed pursuant to the provisions of this act. If an employer requests an administrative hearing pursuant to the provisions of this subsection, the department shall refer the matter to the Office of Administrative Law, for a hearing thereon. At the hearing the employer shall have the burden to show that the trade secret claim is valid. Within 45 days of receipt of the administrative law judge's recommendation, the department shall affirm, reject, or modify the recommendation. The department's action shall be considered the final agency action for the purposes of the "Administrative Procedure Act," P.L. 1968, c. 410 (C. 52:14B-1 et seq.), and shall be subject only to judicial review as provided in the Rules of Court. The department shall inform the employer of its decision on the administrative law judge's recommendation by certified mail. If the department determines that the trade secret claim is not valid, the employer shall have 45 days to notify the department in writing that he has filed to appeal the department's decision in the courts. If the employer does not so notify the department, the department shall take action to provide that the information for which the trade secret claim was made be disclosed pursuant to the provisions of this act.

e. The department shall provide any information for which a trade secret claim is pending or has been approved pursuant to this section to a physician or osteopath when such information is needed for medical diag-

nosis or treatment. The department shall require the physician or osteopath to sign an agreement protecting the confidentiality of information disclosed pursuant to this subsection.

f. Any workplace survey or environmental survey containing information for which a trade secret claim is pending or has been approved shall be made available to the public with that information concealed.

g. The subject of any trade secret claim pending or approved shall be treated as confidential information. Except as provided in subsection e. of this section, the department shall not disclose any confidential information to any person except an officer or employee of the State in connection with the official duties of the officer or employee under any law for the protection of public health, or to the contractors of the State and their employees if in the opinion of the department the disclosure is necessary for the completion of any work contracted for in connection with the implementation of this act. Any officer or employee of the State, contractor of the State, physician or osteopath, or employee of a county health department, local fire department, or local police department who has access to any confidential information, and who willingly and knowingly discloses the confidential information to any person not authorized to receive it, is guilty of a crime of the third degree.

h. The provisions of this section shall not apply to the disclosure of information concerning emissions, and shall not apply to the disclosure of any information required pursuant to any other act.

i. The Department of Health and the Department of Environmental Protection shall jointly adopt rules and regulations to implement the provisions of this section.

L.1983, c. 315, § 15, eff. Aug. 29, 1984.

34:5A-16. Employee requests for information; refusal to work; complaint; civil actions; penalty

a. Any employee or employee representative may request, in writing, from his employer, a copy of a workplace survey, hazardous substance fact sheet, or, where applicable, an environmental survey filed pursuant to the provisions of this act for the facility at which he is employed. The employer shall supply this material within five working days of the request. Any employee or employee representative may request, in writing, the chemical name and Chemical Abstracts Service number of the substance contained in any container which is not labeled pursuant to the provisions of section 14 of this act,[1] and the employer shall supply the employee or employee representative with this information within five working days of the request. An employee shall have the right to refuse to work with a hazardous substance for which a request was made and not honored without loss of pay or forfeit of any other privilege until the request is honored.

b. Any employee or employee representative who believes that an employer has not complied with the provisions of subsection a. of this section may file a complaint with the Commissioner of the Department of Labor. Upon receipt of the complaint, the commissioner shall investigate the allegations contained in the complaint. If the commissioner, following an administrative hearing conducted pursuant to the "Administrative Procedure Act," P.L. 1968, c. 410 (C. 52:14B-1 et seq.), finds that the employer has violated the provisions of subsection a. of this section, he shall initiate a civil action by summary proceeding pursuant to "the penalty enforcement law" (N.J.S. 2A:58-1 et seq.). Any employer violating the provisions of subsection a. of this section is liable to a penalty of not less than $2,500.00 for each offense.

L.1983, c. 315, § 16, eff. Aug. 29, 1984.

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[1] Section 34:5A-14.

34:5A-17. Discharge or penalizing of employee for exercising rights; complaint; adjudication

a. No employer shall discharge, cause to be discharged, or otherwise discipline, penalize, or discriminate against any employee because the employee or his employee representative has exercised any right established in this act.

b. Any employee who believes that he has been discharged, or otherwise disciplined, penalized, or discriminated against by an employer in violation of subsection a. of this section may, within 30 days of the violation, or within 30 days of obtaining knowledge that a violation occurred, file a complaint with the Commissioner of the Department of Labor alleging the violation. Within 30 days of the receipt of a complaint, the commissioner shall conduct an investigation of the complaint. If after the investigation the commissioner determines that there is probable cause that the complaint is valid, he may refer the complaint to the Office of Administrative Law, which, upon the referral, shall commence an adjudicatory proceeding on the complaint, to be conducted as a contested case pursuant to the "Administrative Procedure Act," P.L. 1968, c. 410 (C. 52:14B-1 et seq.), and P.L. 1978, c. 67 (C. 52:14F-1 et seq.). If the Commissioner of Labor or the employee introduces evidence that prior to the alleged violation the employee exercised any right provided in this act, the employer shall have the burden to show just cause for his action by clear and convincing evidence. Within 45 days of the receipt of the recommendations of the administrative law judge, the commissioner shall adopt, reject, or modify the recommendations. The final decision of the commissioner shall be considered the final agency action thereon for the purposes of the "Administrative Procedure Act" and shall be subject only to judicial review as provided in the Rules of Court.

L.1983, c. 315, § 17, eff. Aug. 29, 1984.

34:5A-18. Right to know advisory council; membership; term; qualifications; quorum; officers and employees; compensation

a. There is established in the Department of Health a Right to Know Advisory Council, which shall consist of 11 members appointed by the Governor with the advice and consent of the Senate. Each of these members shall be appointed for a term of three years, provided that of the members of the council first appointed by the Governor, four shall serve for terms of one year, four shall serve for terms of two years, and three shall serve for terms of three years. Of these members, one shall be appointed from persons having training and experience in industrial hygiene recommended by recognized labor unions; one from persons recommended by recognized environmental organizations; one from persons recommended by recognized public interest organizations; one from persons recommended by recognized organizations of chemical industries; one from persons recommended by recognized community organizations; one from persons recommended by recognized organizations of petroleum industries; one from persons recommended by recognized organizations of firefighters; one from persons recommended by recognized business or trade organizations; one from persons recommended by recognized organizations of small business; one from persons holding an M.D. degree recommended by recognized public health organizations; and one from persons with training and experience in environmental epidemiology recommended by recognized research or academic organizations. In the event that no recommendations for a particular category of membership are made to the Governor three months prior to the effective date of this act in the case of the initial appointments, or within 60 days of the date of the expiration of the term of office of any member or the occurrence of any vacancy in the case of subsequent appointments, the Governor shall appoint as a member for that category of

membership a person whom he believes will be representative thereof.

b. A majority of the membership of the council shall constitute a quorum for the transaction of council business. Action may be taken and motions and resolutions adopted by the council at any meeting thereof by the affirmative vote of a majority of the members of the council present and voting.

c. The council shall meet regularly as it may determine, and shall also meet at the call of the Comissioner of the Department of Health, the Commissioner of the Department of Environmental Protection, or the Commissioner of the Department of Labor.

d. The council shall appoint a chairman and other officers as may be necessary from among its members. The council may, within the limits of any funds appropriated or otherwise made available to it for this purpose, appoint such staff or hire such experts as it may require.

e. Members of the council shall serve without compensation, but the council may, within the limits of funds appropriated or otherwise made available to it for such purposes, reimburse its members for necessary expenses incurred in the discharge of their official duties.

L.1983, c. 315, § 18, eff. Aug. 29, 1984.

34:5A-19. Duties

The council shall:

a. Advise the Department of Health on the revision of the workplace hazardous substance list and the Department of Environmental Protection on the revision of the environmental hazardous substance list.

b. Advise the Department of Environmental Protection, the Department of Health, and the Department of Labor on the implementation of this act.

c. Review any matters submitted to it by the Department of Health, Department of Environmental Protection, or the Department of Labor, and state its position within 90 days.

L.1983, c. 315, § 19, eff. Aug. 29, 1984.

34:5A-20. Powers

The council may:

a. Review any aspect of the implementation of this act, and transmit its recomendations to the appropriate department or departments.

b. Hold public meetings or hearings within the State on any matter or matters related to the provisions of this act.

c. Call to its assistance and avail itself of the services of such employees of any State, county or municipal department, board, commission, or agency as may be required and made available for such purposes.

L.1983, c. 315, § 20, eff. Aug. 29, 1984.

34:5A-21. Joint procedure concerning implementation of act; revision of workplace or environmental hazardous substance list

The Department of Health, the Department of Environmental Protection, and the Department of Labor, in conjunction with the council, shall jointly establish a procedure for annually receiving information, advice, testimony, and recommendations from the council, the public, and any other interested party, concerning the implementation of this act. This procedure shall include a mechanism for revising the workplace hazardous substance list and the environmental hazardous substance list. Any revision of the workplace hazardous substance list or environmental hazardous substance list shall be based on documented scientific evidence. The Department of Health and

Department of Environmental Protection shall publicly announce any revisions of the workplace hazardous substance list or the environmental hazardous substance list, and any such additions or revisions shall be made pursuant to the provisions of the "Administrative Procedure Act," P.L. 1968, c. 410 (C. 52:14B-1 et seq.).

L.1983, c. 315, § 21, eff. Aug. 29, 1984.

34:5A-22. County health department file surveys; public access

Each county health department shall maintain a file of workplace surveys and environmental surveys transmitted to it pursuant to the provisions of this act. These surveys, pursuant to the provisions of subsection f. of section 15 of this act,[1] shall be made available to the public at reasonable hours and at a fee not to exceed the cost of reproducing the surveys.

L.1983, c. 315, § 22, eff. Aug. 29, 1984.

34:5A-23. Civil actions for violations; jurisdiction; award

Any person may bring a civil action in law or equity on his own behalf against any employer for a violation of any provision of this act or any rule and regulation promulgated pursuant thereto or against the Department of Environmental Protection or the Department of Health for failure to enforce the provisions of this act or any rule or regulation promulgated pursuant thereto. The Superior Court shall have jurisdiction over these actions. The court may award, whenever it deems appropriate, costs of litigation, including reasonable attorney and expert witness fees.

L.1983, c. 315, § 23, eff. Aug. 29, 1984.

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[1] Section 34:5A-15.

34:5A-24. Substances not included on hazardous substance lists; reporting; liability

Substances not included on the workplace hazardous substance list or the environmental hazardous substance list shall not be subject to the reporting provisions of this act. However, the absence of any substance from the workplace hazardous substance list or the environmental hazardous substance list, or the provision of any information by an employer to an employee or any other person pursuant to the provisions of this act, shall not in any way affect any other liability of an employer with regard to safeguarding the health and safety of an employee or any other person exposed to the substance, nor shall it affect any other duty or responsibility of an employer to warn ultimate users of a substance of any potential health hazards associated with the use of the substance pursuant to the provisions of any law or rule or regulation adopted pursuant thereto.

L.1983, c. 315, § 24, eff. Aug. 29, 1984.

34:5A-25. Local police or fire departments; availability of surveys to public; request for additional information; communications program with research and development laboratory

a. No local police department or local fire department receiving workplace surveys or environmental surveys pursuant to the provisions of this act shall make the surveys available to the public. Any county health department, local police department, or local fire department may request from an employer submitting surveys to it further information concerning the surveis, and the employer shall provide the additional information upon the request therefor. The employer may require the requester to sign an agreement protecting the confidentiality of any additional information provided pursuant to this section.

b. Every employer with a research and development laboratory at his facility shall establish a communications program with the local fire department, which shall be designed to assist the fire department in adequately preparing to respond to emergencies at the research and development laboratory.

L.1983, c. 315, § 25, eff. Aug. 29, 1984.

34:5A-26. Worker and community right to know fund; fee assessment against employers; disbursement; audit; expiration of section

a. There is established in the Department of the Treasury a nonlapsing, revolving fund to be known as the "Worker and Community Right To Know Fund." The fund shall be credited with all fees collected pursuant to this section and interest on moneys in the fund shall be credited to the fund and all moneys in the fund are appropriated for the purposes of the fund, and no moneys shall be expended for those purposes without the specific appropriation thereof by the Legislature. The State Treasurer shall be the administrator of the fund, and all disbursements from the fund shall be made by the State Treasurer upon the warrant of the Director of the Division of Budget and Accounting.

b. The Department of Labor shall annually assess each employer a fee of not less than $50.00 nor more than an amount equal to $2.00 per employee to provide for the implementation of the provisions of this act. All fees collected by the department pursuant to this section shall be deposited in the fund.

c. The money in the fund shall be dispersed only for the following purposes:

(1) Expenses approved by the Director of the Division of Budget and Accounting and incurred by the Department of Health, the Department of Environmental Protection, the Department of Labor, the Department of the

Treasury; and the county health departments in implementing the provisions of this act; and

(2) Repayment to the General Fund of any moneys appropriated by law in order to implement the provisions of this act.

d. The State Treasurer shall annually disburse the moneys in the fund for expenditures approved by the Director of the Division of Budget and Accounting pursuant to paragraph (1) of subsection c. of this section, but in no case in an amount to the several departments that is greater than the following percentages of the fund available in any one year: the Department of Health, 40%; the Department of Environmental Protection, 20%; the county health departments, 15%; the Department of Labor, 15%; and the Department of the Treasury, 10%.

e. Beginning two years after the effective date of this act, the State Treasurer shall make an annual audit of the fund to determine the adequacy of moneys on deposit in the fund to support the implemetnation of the provisions of this act. If the State Treasurer, in consultation with the Department of Health, the Department of Environmental Protection, and the Department of Labor makes a determination that the revenues in the fund are sufficient to warrant a reduction in the fees imposed pursuant to this section for the ensuing year, he may reduce the amount of the fees imposed during that year by an amount warranted by the balance in the fund at the time of the determination.

f. The provisions of this section shall expire five years following the effective date of this act.

L.1983, c. 315, § 26.

Expiration

This section expires five years following the effective date of this act, in accordance with its own terms.

34:5A-27. Legislative intent

It is the intent of the Legislature that the program established by this act for the disclosure of information concerning hazardous substances to employees and the public constitute the principal program in this State. To this end, no municipality or county shall enact any law or ordinance requiring the disclosure of information about, or the identification of, hazardous substances in the workplace or the environment to the extent that the disclosure of information or identification is provided for under this act, and, further, the enactment of this act shall supersede any municipal or county law or ordinance enacted subsequent to May 11, 1983 providing for this disclosure or identification.

L.1983, c. 315, § 27, eff. Aug. 29, 1984.

34:5A-28. Joint report

Within two years of the effective date of this act the Department of Health, the Department of Environmental Protection, and the Department of Labor shall jointly prepare and submit to the Governor and the Legislature a report evaluating the implementation of this act, together with any recommendations for legislative or administrative action deemed necessary or appropriate.

L.1983, c. 315, § 30, eff. Aug. 29, 1984.

34:5A-29. Right to enter facility to determine compliance

a. The Department of Health shall have the right to enter an employer's facility during the normal operating hours of the facility to determine the employer's compliance with the provisions of subsection a. of section 7, and sections 10, 11, 12, 13, and 14 of this act,[1] and any rules and any regulations adopted pursuant thereto.

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[1] Sections 34:5A-7, 34:5A-10, 34:5A-11, 34:5A-12, 34:5A-13 and 34:5A-14.

b. The Department of Environmental Protection shall have the right to enter an employer's facility during the normal operating hours of the facility to determine compliance with subsection b. of section 7 and section 9 of this act,[2] and any rules and any regulations adopted pursuant thereto.

L.1983, c. 315, § 31, eff. Aug. 29, 1984.

34:5A-30. Rules and regulations

Except as otherwise provided in this act, the Department of Health, the Department of Environmental Protection, the Department of Labor and the Department of the Treasury shall adopt any rules and regulations necessary to carry out their respective responsibilities under this act.

L.1983, c. 315, § 32, eff. Aug. 29, 1984.

34:5A-31. Remedies

a. Whenever, on the basis of information available to him, the Commissioner of the Department of Environmental Protection finds that an employer is in violation of subsection b. of section 7, or of subsection b. or c. of section 9 of this act,[1] or any rule and regulation adopted pursuant thereto, or the Commissioner of the Department of Health finds that an employer is in violation of subsection a. of section 7, or of section 10, 11, 12, 13, or 14 of this act,[2] or any rule and regulation adopted pursuant thereto, the Commissioner of the Department of Environmental Protection, or the Commissioner of the Department of Health, as the case may be, shall:

(1) Issue an order in accordance with subsection b. of this section requiring the employer to comply;

(2) Bring a civil action in accordance with subsection c. of this section;

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[2] Sections 34:5A-7 and 34:5A-9.

(3) Levy a civil administrative penalty in accordance with subsection d. of this section; or

(4) Bring an action for a civil penalty in accordance with subsection e. of this section.

The exercise of any of the remedies provided in this section shall not preclude recourse to any other remedy so provided.

b. Whenever, on the basis of information available to him, the Commissioner of the Department of Environmental Protection finds that an employer is in violation of subsection b. of section 7, or of sections b. or c. of section 9 of this act or any rule or regulation adopted pursuant thereto, or the Commissioner of the Department of Health finds that an employer is in violation of subsection a. of section 7, or of section 10, 11, 12, 13, or 14 of this act, or any rule or regulation adopted pursuant thereto, the Commissioner of the Department of Environmental Protection or the Commissioner of the Department of Health, as the case may be, may issue an order (1) specifying the provision or provisions of this act, or the rule or regulation adopted pursuant thereto of which the employer is in violation; (2) citing the action which caused the violation; (3) requiring compliance with the provision of this act or the rules and regulations adopted pursuant thereto of which he is in violation; and (4) giving notice to the employer of his right to a hearing on the matters contained in the order.

c. The Comissioner of the Department of Environmental Protection or the Commissioner of the Department of Health, as appropriate, is authorized to commence a civil action in Superior Court for appropriate relief from a violation of this act. This relief may include an assessment against the violator for the costs of any investigation, inspection, or monitoring survey which led to the discovery and establishment of the violation, and for the

reasonable costs of preparing and litigating the case under this subsection.

d. The Commissioner of the Department of Environmental Protection or the Commissioner of the Department of Health, as appropriate, is authorized to impose a civil administrative penalty of not more than $2,500.00 for each violation and additional penalties of not more than $1,000.00 for each day during which a violation continues after receipt of an order from the commissioner to cease the violation. Any amount imposed under this subparagraph shall fall within a range established by regulation by the commissioner for violations of similar type, seriousness, and duration. No civil administrative penalty shall be imposed until after the employer has been notified by certified mail or personal service. The notice shall include a reference to the section of the act, rule, regulation or order violated; a concise statement of the facts alleged to constitute a violation; a statement of the amount of the civil administrative penalties to be imposed; and a statement of the employer's right to a hearing. The employer shall have 20 days from receipt of the notice within which to deliver to the commissioner a written request for a hearing. Subsequent to the hearing and upon finding that a violation has occurred, the commissioner may issue a final order after imposing the amount of the fine specified in the notice. If no hearing is requested, the notice shall become a final order upon the expiration of the 20-day period. Payment of the penalty is due when a final order is issued or when the notice becomes a final order. The authority to levy a civil administrative penalty is in addition to all other enforcement provisions in this act, and the payment of a civil administrative penalty shall not be deemed to affect the availability of any other enforcement provision in connection with the violation for which the penalty is levied. A civil administrative penalty imposed under this section may be compromised by the commissioner upon the post-

ing of a performance bond by the employer, or upon terms and conditions the commissioner may establish by regulation.

e. An employer who violates this act, an order issued pursuant to subsection b. of this section, or a court order issued pursuant to subsection c. of this section, or who fails to pay in full a civil administrative penalty levied pursuant to subsection d. of this section, shall be subject, upon order of a court, to a civil penalty not to exceed $2,500.00 for each day during which the violation continues. An employer who willfully or knowingly violates this act, or who willfully or knowingly makes a false statement, representation, or certification in any document filed or required to be maintained under this act, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device required to be maintained pursuant to this act, is subject upon order of a court, to a civil penalty of not less than $10,000.00, nor more than $5,000.00 per day of violation. Any penalty imposed pursuant to this subsection may be collected, and any costs incurred in connection therewith may be recovered, in a summary proceeding pursuant to "the penalty enforcement law" (N.J.S. 2A:58-1 et seq.). The Superior Court or county district court shall have jurisdiction to enforce "the penalty enforcement law."

L.1983, c. 315, § 33, eff. Aug. 29, 1984.

EXCERPTS FROM FEDERAL REGISTER

Vol. 47, No. 54

Dated Friday, March 19, 1982

PROPOSED RULES

[Page 12103]

* * * *

(d) *Labels and placards.* The employer is required to label every container in the workplace with the "identity" of the hazardous chemicals contained therein and hazard warnings. The term "container" does not include pipes or piping systems. Containers leaving the workplace also have to be labeled with the identity and hazard warnings, as well as the name, address and telephone number of the manufacturer.

When stationary containers in a work area have similar contents and hazards, the employer may choose to post signs or placards with the appropriate information, rather than individually labeling each container. Employers need not affix new labels to comply with this regulation if those they use already have the required information.

Containers holding ten gallons or less need not be labeled if an employee is using them immediately and has transferred the material from a labeled container to the container being used.

The labeling requirements are very much performance-oriented in that most existing labeling systems could be used to satisfy the requirements. Any identity can be used, as long as the same identity is listed on the corresponding material safety data sheet so cross-references can be made. The hazard warnings may also take whatever effective form the employer wishes, from numerical ratings to pictographs. Since employers will be required to train employees in whatever system is used,

a performance-oriented labeling requirement is considered appropriate.

One issue of concern in this area is the extent of information required to be included on the label. In the proposal, OSHA's intent has been to limit the information to what is needed for immediate protection. More extensive information will be required on material safety data sheets, which will be available to employees. Many employee groups think that detailed information concerning chemical identities of hazardous ingredients, etc. should be on the label. By contrast, some employer groups would prefer that labeling be optional within the workplace and that labeling on containers leaving the workplace not be required at all. OSHA is inviting comment on all such alternatives.

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[Page 12111]

Third, in contrast to the January proposal, the current proposal is largely "performance-oriented." As noted above, both the labeling and education and training requirements are performance-oriented to allow employer to take advantage of a wide variety of compliance approaches tailored to their particular industries and work environments. Similarly, the hazard evaluation procedures have been made substantially more flexible. The evaluation is to be based on scientifically acceptable studies and thus limited to known hazards of a chemical. Also, a list of references and data sources is now provided merely as a guide rather than as a required procedure for this evaluation. If a chemical is determined to pose no hazard, no certification or other compliance activities would be required for the chemical.

The latter may have particularly important cost implications. The initial cost estimates associated with hazard evaluation in the January proposal varied widely ranging from $248 million upwards to $1 billion depend-

ing on the amount of testing initiated in connection with the certifications of "non-hazardous" products. The initial hazard determination cost associated with the current OSHA proposal is estimated at $230 million with an expected annual cost of around $18 million.

It should be noted that the current OSHA proposal does add some specific information requirements for the data sheets filed in a central location for hazardous chemicals. The MSDS information would include chemical names, common names, and CAS numbers for ingredients present in specified concentrations; physical hazards and/or known acute and chronic health effects; routes of entry; precautions for safe handling and use; effective work practices and personal protective devices; emergency and first-aid procedures; and date of preparation. This information was viewed as the minimum necessary to ensure an effective hazard communication standard. The chemical identifier on the label would provide a link between a simple hazard warning on the label and appropriate precautionary measures provided on the MSDS. Under the current OSHA proposal, the MSDS would be the only source of detailed information on the known health and safety effects associated with specific chemicals and appropriate precautions and emergency procedures. For this reason the MSDS must be developed by chemical producers if not currently available for hazardous chemicals and included in first shipments. These changes in the MSDS provision would somewhat increase the cost of providing the information sheets from $16.05 million estimated in the initial cost for the January proposal to $34.24 million. The annual cost would increase from about $1.81 million to $3.66 million.

However, viewed from another perspective, these small cost increases are relatively more cost-effective in supplying hazard information when compared to the substantially higher costs of providing the detailed information on each and every container as well as on the MSDS.

The extra $18.19 million initial cost of the current MSDS provision compares quite favorable (and provides more information) to the additional $395.94 million cost for the extensive labor provided in the January proposal. Likewise, extensive labels would have added $281.07 million to the annual cost of the limited label requirement in the current proposal, while the current MSDS provision results in only a $1.85 million increase.

Fourth, the current proposal does provide for a trade secret exemption either through use of generic names to mask ingredients or through confidentiality agreements with industrial customers. While there are no cost estimates on the effect of the proposed change, the impact is expected to be substantial.

Fifth, the current proposal substantially reduces the documentation necessary on hazard evaluation procedures as well as other recordkeeping requirements. As a result, the initial recordkeeping cost is lowered from $31.35 million projected for the January proposal to $14.7 million under the current proposal. The annual cost of recordkeeping likewise falls from $4.69 million to $2.07 million. This provision—together with more limited labeling and the elimination of "no hazard" certifications, information sheets, and labeling requirements on pipes and support systems—significantly reduces the paperwork burden imposed by the January proposal and meets the intent of the Paperwork Reduction Act of 1980.

Sixth, the compliance period would be extended under the current proposal from roughly 2 years to 3 years in order to allow additional time for the chemical hazard evaluations and to further extend compliance periods for smaller entities in accordance with the intent of the Regulatory Flexibility Act of 1980. Under the proposed schedule, compliance periods would be 1 year on substances and 2 years on mixtures for larger chemical manufacturers (250 or more employees); 18 months on

substances and 30 months on mixtures for medium-sized chemical manufacturers (between 25 and 250 employees), 2 years on substances and 3 years on mixtures for small chemical manufacturers (fewer than 25 employees); and 42 months for other manufacturers. This longer phase-in period means that the actual startup costs of the current proposal would be much lower—amounting to roughly $200 million for the first 3 years. Chapter V of the Regulatory Impact Analysis provides detailed estimates of the cost impact of the proposed changes on small entities.

Finally, while the current proposal has retained much of the coverage contemplated in the January proposal, its scope has changed in several important respects. The current proposal would no longer cover importers and repackagers. Also, while the standard retains its basic coverage of manufacturing industries, the hazard evaluation and MSDS requirement for first shipments of chemical products would now be concentrated among chemical producers rather than chemical users. This will lower the total cost of providing hazard information through "spillover effects" between chemical producers and users, thus eliminating unnecessary duplication and will focus compliance efforts on those industries where the information can be produced most efficiently.

OSHA did consider whether to expand the scope of coverage to construction and other non-manufacturing industries. Application of a hazard communication standard to construction is still under review in view of the unique features of that industry. Other nonmanufacturing industries would appear to have fewer chemical hazards and would receive substantial downstream information benefits from the required labels on containers and MSDSs on first shipments.

OSHA also considered whether to limit hazard coverage to a specific list of chemicals. However, it would be difficult to develop a comprehensive list that included

all safety and health and acute and chronic hazards and to provide timely updates. Furthermore, a performance-oriented standard that [page 12112] allowed employers to determine whether a chemical product poses a significant hazard to employees, with subsequent compliance activities contingent on the determination, was viewed as preferable. However, OSHA requests comments on this approach to hazard determination as well as other alternatives.

In sum, the current proposal is designed to support an effective hazard communication system while minimizing its cost impact on employers. The labels are limited to the hazard warning and an identifier to provide a link to the MSDS, thus improving the effectiveness of the label and lowering the costs of providing the labels. The MSDS complements the label by providing more detailed ingredient and hazard information; all of this would be available in a central file as opposed to on every container. The education and training requirement encourages the employer and employee to use the information provided by the MSDS, thereby increasing the hazard awareness of employees and supervisory personnel. The standard provisions are largely performance-oriented and unnecessary paperwork has been eliminated.

* * * *

FEDERAL REGISTER

Friday
November 25, 1983

Part IV

Department of Labor

Occupational Safety and Health Administration

Hazard Communication; Final Rule

[48 Fed. Reg. 53280]

DEPARTMENT OF LABOR

Occupational Safety and Health Administration

29 CFR Part 1910

Hazard Communication

AGENCY: Occupational Safety and Health Administration (OSHA), Labor. .

ACTION: Final rule.

SUMMARY: OSHA is hereby promulgating a final occupational safety and health standard entitled "Hazard Communication" (29 CFR 1910.1200). The standard requires chemical manufacturers and importers to assess the hazards of chemicals which they produce or import, and all employers having workplaces in the manufacturing division, Standard Industrial Classification (SIC) codes 20 through 39, to provide information to their employees concerning hazardous chemicals by means of hazard communication programs including labels, material safety data sheets, training, and access to written records. In addition, distributors of hazardous chemicals are required to ensure that containers they distribute are properly labeled, and that a material safety data sheet is provided to their customers in the manufacturing division SIC Codes.

Implementation of this final standard will reduce the incidence of chemically-related occupational illnesses and injuries in employees of the manufacturing division. Increased availability of hazard information will assist employers in these industries to devise appropriate protective measures, and will give employees the information they need to take steps to protect themselves.

The twenty-four states with their own OSHA-approved occupational safety and health plans must adopt a com-

parable standard within six months of this publication date. These states are: Alaska, Arizona, California, Connecticut (for state and local government employees only), Hawaii, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Nevada, New Mexico, North Carolina, Oregon, Puerto Rico, South Carolina, Tennessee, Utah, Vermont, Virginia, Virgin Islands, Washington, and Wyoming. Until such time as a state standard is promulgated, Federal OSHA will provide interim enforcement assistance, as appropriate, in these states.

EFFECTIVE DATES: Chemical manufacturers and importers are required to label containers they ship and provide required material safety data sheets by November 25, 1985. Distributors are required to be in compliance by November 25, 1985. All employers covered by the standard are to be in compliance by May 25, 1986.

FOR FURTHER INFORMATION CONTACT: Mr. James F. Foster, U.S. Department of Labor, Occupational Safety and Health Administration, Room N3641, 200 Constitution Avenue, N.W., Washington, D.C. 20210; telephone (202) 523-8151. Copies of this document may be obtained from the Office of Public Affairs at this address and telephone number, or by contacting any OSHA regional or area Office.

SUPPLEMENTARY INFORMATION: The recordkeeping requirements in the standard have been approved by the Office of Management and Budget under the Paperwork Reduction Act of 1980, Pub. L. 96-511, 44 U.S.C. 3501, *et seq.* The OMB approval number is 1218-0072.

I. INTRODUCTION

A. The Format of This Document (the Preamble)

The preamble accompanying this final standard is divided into five parts, numbered I through V. The following is a table of contents:

I. Introduction.

A. Format of the document.

B. History of the proceedings.

II. Overview of the Final Standard and Summary of Major Issues.

A. Overview and purpose of the final standard.

B. Need and support for the standard.

C. Issues raised by provisions of the proposed standard.

D. Legal authority and related issues.

III. Regulatory Analysis.

A. Regulatory impact analysis; economic factors.

B. Regulatory flexibility analysis.

C. Environmental impact analysis.

IV. Summary and Explanation of the Final Standard.

V. Authority, Signature and the Standard.

Part II provides a detailed analysis of public input on the proposed standard and related issues. Part IV is a provision-by-provision discussion of the final standard, including a brief summary of each requirement and the rationale supporting it. References to the rulemaking record are in the text of the preamble, and the following abbreviations have been used:

1. Ex.: Exhibit number in Docket H-022.

2. Tr.: Transcript page number.

B. History of the Proceedings

1. *The development of the proposal.* OSHA's involvement in the issue of identification and communication of

hazards in the workplace began nine years ago. In 1974, the Standards Advisory Committee on Hazardous Materials Labeling was established under Section 7(b) of the OSH Act to develop guidelines for the implementation of Section 6(b)(7) of the Act with respect to hazardous materials (Ex. 16-1). On June 6, 1975, the Committee submitted its final report which identified issues and recommended guidelines for categorizing and ranking chemical hazards (Ex. 16-2). Labels, material safety data sheets, and training programs were also recommended.

The National Institute for Occupational Safety and Health (NIOSH) published a criteria document in 1974 which recommended a standard to OSHA (Ex. 16-3). The document, entitled "A Recommended Standard * * * An Identification System for Occupationally Hazardous Materials," included provisions for labels and material safety data sheets.

On January 28, 1977, OSHA published an advance notice of proposed rulemaking on chemical labeling in the Federal Register (42 FR 5372). The notice requested comments from the public regarding the need for a standard that would require employers to label hazardous materials. Information was also requested regarding the provisions to be included in such a standard to assure that employees are apprised of the hazards to which they are exposed. A total of eighty-one comments were received from a variety of federal, state, and local government agencies, trade associations, businesses, and labor organizations (Ex. 2B). In general, there was support for the concept of a hazard communication standard.

On January 16, 1981, OSHA published a notice of proposed rulemaking (NPRM) entitled "Hazards Identification" (46 FR 4412). The NPRM would have required employers to assess the hazards in their workplaces using specified determination procedures. Labels including extensive information about these hazards would have been

required on all containers within the workplace (including pipes), as well as on containers leaving the workplace.

OSHA withdrew the NPRM on February 12, 1981 for further consideration of regulatory alternatives (46 FR 12214).

2. *The proposal.* On March 19, 1982, OSHA published the NPRM that was the subject of this rulemaking proceeding (47 FR 12092). The notice established a sixty day period, which ended on May 18, 1982 for submission of written comments and filing of notices of intent to appear at the public hearings. The 53281 deadline for submission of written statements and other documentary evidence to be presented during the hearings was set as June 1, 1982.

The proposed standard required chemical manufacturers to assess the hazards of all chemicals which they produce, and all employers in SIC Codes 20 through 39 to establish hazard communication programs for their employees. This communication was to be accomplished by labeling in-plant and downstream containers, through the availability of material safety data sheets, and by employee training.

The proposed standard represented OSHA's determination that rulemaking was necessary because many employers and employees in the manufacturing division are not aware of the presence of hazardous chemicals in their workplaces. This lack of knowledge increases the risk of occupationally-related chemical source illnesses and injuries, since appropriate protective measures can only be designed and implemented when the presence of a hazard is known.

3. *Response to the proposal.* OSHA received 221 written comments on the NPRM prior to the public hearing, as well as a number of late comments after the hearing began. All written evidence concerning the NPRM was

entered into Docket H-022, which was established for this rulemaking proceeding.

Public hearings were conducted under OSHA's procedural regulations for rulemaking (29 CFR Part 1911). They were presided over by the Administrative Law Judge Stuart A. Levin, and all participants were given the opportunity to present oral testimony and to question other witnesses. The hearings were held from June 15-24, 1982, in Washington, D.C.; July 13-14, 1982, in Houston, Texas; July 20-23, 1982, in Los Angeles, California; and July 27-31, 1982, in Detroit, Michigan. A total of 4,253 pages of transcript was generated during these nineteen days of oral testimony.

The hearing participants were permitted to submit additional information to the record until September 1, 1982. The period for submission of post-hearing comments and briefs was originally scheduled to end on October 15, 1982, but Judge Levin extended the date to November 1, 1982, in response to a request from participants (Ex. 173). Sixty-two (62) exhibits were received after the close of the hearing.

4. *The record.* The public record for the proposed rule was certified by Judge Levin on November 10, 1982. The record consists of all material submitted to the OSHA Docket Office, Docket No. H-022, by either OSHA or the public, including:

(a) Comments submitted in response to the ANPR (42 FR 5372);

(b) Comments submitted in response to the NPRM (47 FR 12092);

(c) Background materials collected by OSHA;

(d) The draft regulatory impact and regulatory flexibility analysis (Ex. 17);

(e) Notices of intent to appear at the public hearings;

(f) Pre-hearing submissions of testimony and evidence;

(g) Verbatim transcripts of the public hearings;

(h) Hearing exhibits; and

(i) Post-hearing submissions.

The views of a wide range of employees, businesses, labor unions, trade associations, public interest groups, as well as state and local governments and other interested parties, are represented in the public record.

Copies of the official list of entries in the record as well as the exhibits themselves, are available from the OSHA Docket Office, Docket No. H-022, Room S-6212, U.S. Department of Labor, 200 Constitution Avenue, N.W., Washington, D.C. 20210; telephone (202) 523-7894.

II. Overview of the Final Standard and Summary of Major Issues.

A. Overview and Purpose of the Final Standard

Although the need for apprising workers of the hazards of the chemicals they work with has long been recognized by pational safety and health professionals, as well as other representatives of industry, labor, academia, and the government, the difficulties encountered in attempting to define hazards and determine the appropriate means of communication have long delayed implementation of a systematic approach. In the interim, voluntary systems of various types have been designed and instituted in some segments of industry. Some of these systems are quite comprehensive and effective, while others incorporate a cursory approach to the problem.

The purpose of this standard is to establish uniform requirements for hazard communication in one segment of industry, the manufacturing division. Under the provisions of this final standard, each employee in the manufacturing industries who is exposed to hazardous chemi-

cals will receive information about them through a comprehensive hazard communication program. Chemical manufacturers and importers will be required to evaluate the hazards of the chemicals they produce or import, and to transmit this information to downstream employers by means of labels on containers and material safety data sheets. In addition, all covered employers will be required to provide the information to their employees by means of labels on containers, material safety data sheets, and training.

The standard is designed to ensure that all employers receive the information they need to inform their employees properly, and to design and implement employee protection programs. In addition, it will provide necessary hazard information to employees, so that they can meaningfully participate in, and support, the protective measures instituted in their workplaces. The result of this hazard communication program will be to reduce the incidence of chemical source illnesses and injuries in the manufacturing division. In addition, once the information about these chemicals has been generated by the producers, this standard establishes the framework for future regulation, if necessary, to similarly cover other user industries where workers are also exposed to hazardous chemicals.

In the following discussions, we have summarized the major issues raised by participants during this rulemaking proceedings in response to provisions in the proposed standard. The positions of the various participants have been presented as well. In addition, we have indicated which arguments and evidence we have found to be persuasive, and what changes we have thus made to the proposed provisions in preparing the final standard.

The record for this rulemaking is extensive, and OSHA appreciates the time and effort expended by interested parties to ensure that as much information as possible was available to the Agency for purposes of making de-

cisions on the final standard. In analyzing the record and preparing this final document, OSHA has carefully weighed all of the alternatives presented, and attempted to balance the concerns of all parties in the final provisions. Many of the decisions to be made were of a policy, rather than technical, nature. Unlike other rulemakings where scientific studies form the bases for much of the decisionmaking, this rulemaking is primarily based on the actual experience and policy recommendations presented by participants in the proceedings. OSHA's primary intent in promulgating this final standard is to ensure that employees will receive as much information as needed concerning the hazards in their workplaces, and 53282 that this information will be presented to them in a usable, readily accessible form. The Agency's secondary intent is to write the standard in such a way that those companies who have voluntarily instituted effective programs of hazard communication for their employees may continue to use them without substantial modification. The latter goal is accomplished by presenting the provisions of the final standards in performance language wherever possible.

B. Need and Support for the Standard

Although the lack of adequate hazard information in the manufacturing industries has long been recognized, objective data quantifying the extent of the problem are not generally available.

In the NPRM, OSHA presented the findings of the National Occupational Hazards Survey (NOHS) conducted by the National Institute for Occupational Safety and Health (NIOSH) as being indicative of the broad scope of the problems addressed by the proposed standard (47 FR 12093-4). The Agency noted at the time that it was aware that criticisms have been levied by various parties concerning the conclusions and extrapolations of the NOHS. In particular, the fact that the data

were collected ten years ago and may be outdated now concerns some parties. However, the NOHS remains the only comprehensive study which indicates the extent of chemical exposures in industry.

According to the NOHS data, approximately 25 million American workers, or one in four, are potentially exposed to one or more of the nearly 8,000 hazards identified by NIOSH (Exs. 16-4, 16-5, 16-6, and 16-7). As many as 40 to 50 million Americans (23 percent of the entire U.S. population) may have been exposed at some point during their lifetimes to one or more of the hazardous chemicals presently regulated by OSHA. Thus it can be concluded that chemical exposures in the occupational setting and particularly in manufacturing, are frequent, and the need for adequate information to be given to exposed employees is critical.

Several participants in the rulemaking stated that the NOHS data should not be used to substantiate the need for the standard, due to the limitations described above (Exs. 19-44, 19-76, 19-91, and 19-147). For example, the Chemical Specialities Manufacturers Association (Ex. 19-76) stated:

> The National Occupational Hazards Survey (NOHS) data upon which OSHA relies to document the need for and calculate the benefits of this standard are not currently relevant if they ever were. It is erroneous to assume that conditions in the workplace ten years ago are still present, given the changes in chemicals used, developments in engineering controls, and advances in hazard communication practices. For example, material safety data sheets (MSDS's) did not come into use until 1970, and NOH's failure to find them in widespread use in a survey published in 1972 is not surprising.

OSHA used the NOHS data to indicate the broad scope of chemical exposures in general, including the number

of chemical products and the associated numbers of exposures involved. NOHS testified regarding the validity of using the NOHS data for this purpose (Tr. 185):

> NIOSH feels that despite the dating on the survey that it is really the only national source of information on this particular type and that it has held up well and does provide useful information if one realizes the—how the data was gathered and what the size of the data base and so forth.
>
> We feel there's no other source of data that is available that would really contradict that nor could replace that in any way.

NIOSH is in the process of doing a second study regarding the extent of hazardous exposures. Their experiences in conducting health hazard evaluations and research projects in the years since the original NOHS was undertaken have provided confirming evidence that the data collected in the survey were valid and useful (Tr. 184-6). Since no alternative sources of comparable data to indicate the magnitude of chemical exposures in the occupational setting exist, OSHA's use of NOHS is necessary and appropriate, and substantiates the need for a standard to ensure information is presented to employees in the manufacturing sector who are exposed to such chemicals.

In the NPRM, OSHA also cited statistics compiled by the Bureau of Labor Statistics concerning the occurrence of occupational illnesses resulting from workplace exposures to hazardous chemicals as an indication of the need for hazard communication (47 FR 12094). OSHA's analysis of the illness statistics for 1977 and 1978, indicated that a total of more than 174,000 illnesses were reported in those two years which were most likely caused by chemical exposures. OSHA concluded that implementation of appropriate hazard communication in these workplaces would serve to decrease the number of such

incidents by providing employees with the information they need to help protect themselves, and ensure that their employers are providing them with the proper protection.

In addition to these types of objective data, OSHA also cited testimony presented by workers and health professionals during rulemaking hearings and in testimony before Congress as evidence of the need for a standard. The Agency also described a number of existing documents, including OSHA regulations, a NIOSH criteria document, voluntary consensus standards, and several Congressional reports as further indication of general recognition of this need (Exs. 16-10, 16-11, 16-12, and 16-13).

The record developed during this rulemaking overwhelmingly substantiated OSHA's conclusion that there is a critical need for a standard to ensure disclosure of hazard information to employees in the manufacturing sector. This substantiation was received from all segments of those interested in, or potentially affected by, this rulemaking. For example, the following statement was submitted by the American Petroleum Institute (Ex. 181):

> The goal of effective hazard communication can only be approached where responsible employers and responsive employees work together in developing and implementing an integrated hazard communication program. This proposed rule would require the identification and evaluation of intrinsic chemical hazards and the preparation and availability of MSD's for hazardous substances in the workplace and, perhaps most importantly, employee training regarding chemical hazards. These and other elements of individual workplace hazard communication programs should ensure significantly improved occupational safety from chemical hazards.

This support of the need for a standard to establish comprehensive hazard communication programs in the manufacturing industries was also expressed by other industry representatives, both individual companies and trade associations. For example:

> If implemented, this standard should do more to educate the worker about potential workplace hazards than any other standard since OSHA's inception. Educated employees make safer employees.
>
> (Kaiser Aluminum and Chemical Corporation, Ex. 19-196)

> The communication of hazards which surround employees is a basic and elementary component of any successful workplace. As such, the hazard communication process is not only necessary for the prevention of many avoidable injuries and illnesses, but moreover, a cornerstone to such effort.
>
> (National Association of Manufacturers, Ex. 179)

> As a concerned and responsible employer and producer of chemicals, we desire that our own employees and those of our customers be provided with accurate information on the hazards of the chemicals they handle and are 53283 instructed in proper work practices to minimize the risk from those hazards. We thus support OSHA's intention to develop a sound standard to support those aims.
>
> (Celanese Corporation, Ex. 19-185)

> Workers in this country are exposed to hazardous chemicals every day. The effective communication of potential hazards can help reduce the national incidence of occupational injuries and illnesses.
>
> (Gulf Oil Chemicals Company, Ex. 19-96)

Ignorance of workplace hazards can subject employees to unacceptable risks.

(Shell Oil Company, Ex. 19-124)

The comments and the hearings have confirmed the need for an effective federal standard requiring employers to identify workplace hazards, communicate hazard information to employees, and train employees in recognizing and avoiding those hazards. The testimony of employers, employees, unions and public health officials has uniformly supported the appropriateness of a rule directed toward these ends. There has been no serious dispute of the proposition that well-structured programs for informing employees of the hazards of the workplace are beneficial and cost-effective.

(Chemical Manufacturers Association, Ex. 182)

Representatives from academia and other professionals were also supportive of the need for a federal hazard communication standard:

The proposed Hazard Communication standard is a considerable advance over present practice and should be of great assistance in protection of workers from hazardous chemicals.

(Howard E. Ayer, University of Cincinnati Medical Center, Ex. 19-5)

The American Chemical Society recognizes the need for hazard communication and supports the concept of uniform federal guidance on hazard communication. OSHA's proposed rule (47 FR March 19, 1982) generally reflects a more realistic approach than the previous version proposed in January 1981. While the current proposal can and should be further modified, the document represents a positive contribution for which we recommend OSHA.

(American Chemical Society, Ex. 19-206)

Most of the patients whom I see have not been informed of the identity or toxic nature of the materials with which they work. Some know a trade name or chemical generic name, but their knowledge ends there. They rarely have sufficient information about the material with which they work to understand the actual or potential toxicity of the chemical and to take steps to protect themselves from the effects of the material * * * (Tr. 96-7).

At the present moment, most activity on hazard communication is voluntary and subject to no standard and little regulation. Some forward-looking manufacturers and employers aware of their own use of toxic materials have developed programs which are similar to those which will be required by the proposed standard.

The proposed standard will encourage these manufacturers and employers to forge ahead with their programs. Some less forward-looking companies have been pushed into developing hazard communication programs by decisions in worker's compensation hearings, tort courts or OSH hearings.

On the other hand, most manufacturers have done little or no work in this area. For them the standard will provide an appropriate impetus to implement toxic materials health and safety hazard communication programs * * *

(Dr. Daniel Teitelbaum, Tr. 109)

Representatives of various government entities were also vocal in their support of the need for a standard in the area of hazard communication:

My concern today is for the future and for the necessity to assure that workers have the right to know what substances they are exposed to in the workplace. If we fail to promulgate an effective haz-

> ards communication programs standard, we will assure ourselves that in the future we will continue to be puzzled and unable to determine why workers are becoming ill or dying from exposures to unkown chemicals in the workplace * * *
>
> (Michigan Department of Labor, Ex. 114)
>
> The Department of Defense strongly supports the intent of the proposed standard published in the Federal Register on March 19, 1982, to help ensure that personnel are aware of potential workplace chemical hazards and adequately protected therefrom * * *
>
> (Department of Defense, Ex. 19-148)

Most importantly, workers and their representatives reaffirmed their need for a standard to obtain information about the hazards they are exposed to:

> What we have been seeing time after time through all the work we do, is that workers simply do not know what kinds of materials they are exposed to on the job * * *
>
> Without more comprehensive, enforceable legislation, workers can't help themselves or use our technical resources if they are in a position where they can walk into a COSH library and not even tell us what to look up or look up for themselves because they don't know what they are exposed to:
>
> (Joan Parker, New York State Council on Occupational Safety and Health. Tr. 3454)
>
> We feel now, testifying for a strong national right-to-know standard as we did for our state's right-to-know law, that the key to identifying and correcting health and safety hazards in the workplace lies with the workers' participation. Workers have an intimate knowledge of the conditions of work, how work is done, and what changes have been

made over the years, and how conditions in the workplace affect them.

Armed with the knowledge obtained from the right-to-know legislation, workers will be made aware of acute and chronic symptoms of exposure to the toxic substances they work with, and therefore can be alerted and enough in advance, before any serious harm can be done. Workers have a day-to-day contact with the process of production that allows for an in-depth analysis of where the problems lie. And, most importantly, with this right-to-know and increased awareness, the workers can effectively assist management and, if needed, pressure management to make necessary changes that effect their well-being.

(James Valenti, Local 12457, United Steelworkers of America, Tr. 3792-3)

I strongly feel that there is a necessity to initiate a program whereby the company will eliminate the practice of purchasing chemicals and putting them into use prior to obtaining the knowledge that can be found in the material safety data sheets.

To summarize, I'd like to add one final note. I strongly feel that the company should institute a program of chemical awareness, whereby they will personally inform the employees of: (1) The exact chemicals in use; (2) the health hazards involved in them; (3) the precautions that you take when handling them.

(James Centner, Local 2693, United Steelworkers of America, Tr. 3805)

Additional examples of statements supporting the need for a federal standard on hazard communication may be found in the record in the following exhibits: 19 (1, 2, 3, 4, 5, 6, 7, 8, 11, 14, 23, 27, 40, 43, 44, 46, 48, 50, 51,

54, 55, 57, 59, 61, 62, 64, 65, 66, 67, 69, 74, 77, 79, 82, 83, 85, 86, 88, 89, 90, 91, 92, 94, 96, 109, 111, 115, 116, 119, 122, 124, 125, 126, 131, 135, 140, 145, 146, 147, 148, 154, 156, 158, 164, 169, 170, 174, 180, 185, 193, 194, 196, 201, 204, 206, 207, 209, 210, 211, 214, 215, 217, A-6, A-9); 28; 31; 34; 35; 36; 42; 47; 48; 53; 59; 63; 64; 65; 66; 83; 161; 167; 174; 179; 180; 181; 182.

Based on this evidence OSHA has concluded that a hazard communication standard is necessary to reduce significantly the risk of chemically-related disease which results from the current state of hazard communication practices.

Another reason many participants in the rulemaking support the need for a Federal standard is the recent proliferation of state and local right-to-know laws. Most companies in the manufacturing sector have business dealings which involve interstate commerce, and are thus subject to numerous different and potentially conflicting regulations.

For example, the National Paint and Coatings Association addressed the issue of state and local standards in their written comments as follows (Ex. 19-62):

> It is NPCA's belief that a Federal OSHA Standard, rather than a variety of differing State and local requirements, best serves the interests of the private sector, labor interests, the general public and the Agency itself. While we recognize statutory limitations in 53284 this area, we believe every effort should be made to see that such a Federal standard preempts State and local efforts.
>
> Without a strong Federal role, individual States will enact a variety of diverse labeling rules that would hamper interstate business operations and impede worker protection. Indeed, manufacturers in interstate commerce are faced with the threat of 50

> different chemical hazard warning systems mandating conflicting, overlapping, and duplicative requirements for hazard warnings * * *

Similar concerns were expressed by many of the other participants in the rulemaking (see, for example, Exs. 19-46, 19-51, 19-57, 19-91, 19-150, 136, 174, 181, and 182).

Approximately twelve states and six local governments have some type of regulation related to the identification of hazardous substances. About thirteen other states and three other local governments have introduced proposed legislation either in this legislative session or in previous sessions. They cover different lists of substances, have different reporting requirements, serve different purposes, have different labeling and material safety data sheet requirements, and have different educational and training requirements.

In discussing the enforcement of such standards in a State with relatively comprehensive regulations, Joan Parker, representing the New York State Council on Occupational Safety and Health, stated regarding the New York State Law that "* * * although the intent is admirable the problem is that there is no enforcement" (Tr. 3473). She further stated that her experience with the State Right-to-Know law indicated the need to complement this law with a strong Federal standard.

The potential for conflicting or cumulatively burdensome State and local laws has been acknowledged by industry representatives to be immense. As stated above, this subject was cited in many comments submitted prior to the hearing, in presentations made during the hearings, and in post-hearing comments.

By promulgating a Federal standard, OSHA is in a position to reduce the regulatory burden posed by multiple State laws. In the final standard, OSHA preempts State laws which deal with hazard communication re-

quirements for employees in the manufacturing sector, except in those States with a State plan which have a standard that regulates in this area. In order to regulate with respect to hazard communication for employees in the manufacturing sector, a State will have to submit their intended requirements to OSHA for approval under section 18(b) of the Act which deals with State plans, show that they are at least as effective as the Federal standard, and that there is a compelling need for a separate standard. The Legal Authority Section of the preamble addresses the preemption issue in more detail.

OSHA realizes that the rationale favoring a single Federal standard in place of various State standards for chemicals in interstate commerce applies as well to the concept of agreed international standards for substances in international commerce. Accordingly, these regulations will be reviewed on a regular basis with regard to similar requirements which may be evolving in the United States and in foreign countries.

Although the vast majority of the participants in the proceeding explicitly supported the need for a Federal hazard communication standard, there were a few parties who did not agree that OSHA should issue such a rule (Exs. 19-87, 19-162, 19-181, 19-195, 19-200, 19A-19, and 105). For example, Master Chemical Corporation testified as follows during the Detroit session of the public hearing (Tr. 3916-17):

> * * * Master Chemical rejects the need for any such rule that is being proposed. Granted, there is an artificially created need, a politically expedient need, but there is no real need in terms of protecting workers.
>
> Master Chemical says this because we also reject the idea that the free market system has failed in providing hazard information to users of industrial chemicals.

> During the past two years, there has been a steady increase in the demand for this type of information from our customers. Master Chemical has responded to this demand and our suppliers have acceded to our demands for this information, or they would have ceased to be our suppliers.
>
> This regulation takes away from those companies that are socially responsible, which we believe to be by far the majority of business, the competitive advantage that they have worked for and earned by responding to the demands of the market.
>
> The better the response, the better the competitive advantage.
>
> This regulation interferes with the natural preferences of the market place, thereby interfering with the weeding out of those companies that refuse to comply with its demands.

While OSHA respects Master Chemical's philosophy regarding hazard communication, the weight of the evidence submitted by other participants in this rulemaking proceeding unfortunately does not appear to support their assertion that market responses will ensure adequate hazard information by rewarding those companies which provide the most complete information. Although their firm has undertaken toxicity testing, trains their employees, and provides detailed labels and information sheets to their customers (Ex. 105), many of the firms that will be covered by this standard do much less. For example, the Aerospace Industries of America, Inc. stated the following on their experiences in obtaining hazard information (Ex. 19-212):

> As users of large volumes of industrial chemicals and specialty chemicals, our member companies have experienced the inefficiency and burden of trying to obtain hazard information under a voluntary standard. The new standard should correct past ineffi-

ciencies by guaranteeing that chemical users will receive the information they require in a timely and routine manner.

OSHA agrees with the majority of the participants in the rulemaking that the need for a Federal standard has been amply demonstrated. Companies like Master Chemical will nonetheless benefit from their prior diligence through vastly reduced costs of complying with this standard.

C. *Issues Raised by Provisions of the Proposed Standard*

The following discussion will summarize the technical and policy issues raised by the proposed standard, and the evidence in the record concerning these issues:

1. *Scope and application*—a. *Industries Covered.* The proposed standard applied to the manufacturing division of the Standard Industrial Classification (SIC) Codes, 20 through 39. Although hazardous chemicals are used in other industries as well, OSHA determined that the employees in the manufacturing sector are at the greatest risk of experiencing health effects from exposure to hazardous chemicals. The Agency thus decided to exercise its authority to set priorities for standards promulgation under Section 6(g) of the Act, and limited the proposed standard's scope to the manufacturing sector.

This decision was based primarily on an Agency analysis of occupational injury and illness statistics compiled annually by the Bureau of Labor Statistics (BLS) (47 FR 12094; Exs. 16-8, 16-36, 16-37, and 17). Since the purpose of the proposed standard was ultimately to decrease the number of occupational injuries and illnesses caused by exposure to chemicals, OSHA decided to ascertain where these types of effects are occurring. Recognizing that the BLS figures, although substantial, probably only reflect a small percentage of the incidents actually

occurring in exposed employees, the statistics nonetheless reveal patterns of occurrences in the various industries for which they are complied. (The regulatory analysis for 53285 the proposal (Ex. 17) provided a detailed discussion of the underreporting of occupational illnesses.) Table 1 indicates the industry distribution of chemical source injuries and illnesses found in the Supplementary Data System for 1976 and 1977, Subfile of Chemical Injuries and Illinesses (Ex. 16-27). As can be seen from this table, nearly half of all reported chemical source injuries and illnesses occurred in the manufacturing sector. It should be noted that it is not appropriate to compare combined injury and illness incidence rates, regardless of the cause, to assess industry effects, since this standard only deals with chemical exposures. Such aggregate rates include, for example, construction accidents and back injuries which are unrelated to chemicals and thus would not be affected by chemical hazard communication.

TABLE 1.—DISTRIBUTION OF CHEMICAL SOURCE INJURIES AND ILLNESSES BY INDUSTRY

Industry	Total number (1976)	Percent [1] of total (1976)	Total number (1977)	Percent [1] of total (1977)
Agriculture, Forestry, Fisheries	535	2.8	682	3.1
Mining	325	1.7	455	2.1
Construction	1,545	8.1	1,802	8.3
Manufacturing	9,217	48.4	10,234	47.1
Transportation and Public Utilities	997	5.2	1,158	5.3
Wholesale Trade	524	2.8	610	2.8
Retail Trade	2,176	11.4	2,464	11.3
Services	2,548	13.4	3,184	14.6
Government	1,021	5.4	961	4.4
Other	171	0.9	216	1.0

[1] The percent figures may not add due to rounding.

Source: Supplementary Data System 1976 and 1977, Subfile of Chemical Injuries and Illnesses.

An examination of the industry distribution of chemical source illnesses for 1978 (Ex. 16-8) is even more telling in regards to the contribution of the manufacturing sector to the overall occurrence of chemical source occupational illnesses. Since illnesses are more likely to be due to chemical exposures than injuries are, it is in this area that the effects of hazard communication should be most apparent.

Occupational illnesses are reported to the BLS in seven categories:

1. Skin disease or disorders.
2. Dust diseases of the lungs.
3. Respiratory conditions due to toxic agents.
4. Poisoning.
5. Disorders due to physical agents.
6. Disorders associated with repeated trauma.
7. All other occupational illnesses.

In analyzing this BLS data, OSHA assumed that Categories (1) through (4) are primarily due to chemical exposures. Category (1) includes skin ailments due to handling plants, so in the agriculture sector the numbers are greater than they would be if only chemically-related skin diseases or disorders were reported. Categories (5) and (6) are obviously not related to chemical exposures. Category (7) primarily deals with biological agent diseases, but also includes benign and malignant tumors. Since the potential effect of the proposed standard in preventing occupationally-induced cancer was dealt with separately in the regulatory analysis (Ex. 17) Category (7) was not included in this analysis either.

As OSHA reported in the preamble to the proposed standard, the manufacturing sector is responsible for a disproportionately high number of these chemically-related occupational illnesses. In Table 2, the number of such cases reported in 1978 are indicated for each indus-

try, as well as the percentage of the total number reported that these cases represent. These were the latest figures available when the preamble for the proposal was prepared. In addition, Table 2 includes the same statistics for 1981, the latest year for which statistics are now available, to show that the trend in industry occurrence is similar to 1978. The 1981 statistics became available after the public record for this rulemaking was closed, and were not used to make the decisions regarding the scope of the standard, but are merely presented as a point of comparison. A copy of the 1981 report is available in the public docket for this rulemaking.

It can be seen from Table 2 that the manufacturing sector accounts for more than half the reported cases in both years. Since the average total employment in 1978 in manufacturing was 20.5 million, or 32% of the total, this clearly indicates that manufacturing sector employees are at the greatest risk of experiencing health effects due to chemical exposures.

TABLE 2.—CHEMICAL SOURCE ILLNESSES BY INDUSTRY

Industry	Number [1] of cases 1978	Percent of total	Number [1] of cases 1981	Percent of total
Private Sector (Total)	86.7	100	69.5	100
Agriculture	2.7	3.1	3.0	4.3
Mining	1.0	1.1	1.0	1.4
Construction	5.1	5.9	4.7	6.8
Manufacturing	53.8	62.1	37.9	54.5
Transportation/Utilities	4.8	5.5	4.3	6.2
Wholesale/Retail Trade	7.6	8.8	5.9	8.5
Financial/Insurance/ Real Estate	1.0	1.1	0.7	1.0
Services	10.9	12.6	11.8	17.0

[1] In thousands.

Source: Prepared by OSHA from *Occupational Injuries and Illnesses in the United States by Industry*, 1978 and 1981, Bureau of Labor Statistics.

Examination of incidence rates for chemical source occupational illnesses also reveals that manufacturing employment represents a higher risk of harmful chemical exposures. The last year that the BLS reported occupational illness incidence rates by industry division and category of illness was 1977. Using the same Categories (1) through (4) as described above, the chemical source illness incidence rates per 1000 full-time workers in the private sector in 1977 were:

Industry	Incidence rate
Agriculture	5.5
Mining	0.9
Construction	1.7
Manufacturing	3.1
Transportation/Utilities	1.4
Trade	0.5
Finance, Insurance, Real Estate	0.2
Services	1.1

The only industry division which has a greater incidence rate than manufacturing is Agriculture. As noted above, since Category (1) includes effects resulting from handling plants, which is not a chemical exposure situation, occurrence of chemically-related skin illness in Agriculture is overstated. The incidence rate for this category was 4.4, or more than 80% of the total incidence reported for Agriculture. In addition, OSHA cannot regulate chemical exposures related to the field use of pesticides, which would be expected to be the most common source of chemical exposures in the Agriculture industry. (Tr. 2260-61), because EPA has exercised its jurisdiction in this area under the Federal Insecticide, Fungicide, and Rodenticide Act. Pesticide exposures would also be expected to cause a large number of the skin ailments reported for the Agriculture industry in Category 1 as well as the poisonings in Category 4 (incidence of 0.7).

Therefore, it appears that manufacturing has the highest incidence rate when considering just chemical exposures, and only those which the Agency has the authority to regulate. The category which has the second highest number of reported illnesses (Table 2), Services has an incidence rate that is one third that of manufacturing. Recognizing the limitations of these data due to the effects of underreporting, it still appears that the incidence rate also support OSHA's determination that manufacturing employees have the greatest risk of experiencing health effects due to chemical exposures, since the incidence rate for manufacturing is 53286 from about two to ten times greater than the other industries.

No evidence was submitted to the record which contradicted OSHA's finding that manufacturing employees experience the greatest number of chemical source injuries and illnesses. One participant did point out that overall injury and illness incidence rates are comparable in a number of industries (LACOSH, Tr. 3128):

> * * * One way to determine if an industry is hazardous compared to other industries is to look at injury and illness rates. And, we did that. And, the Bureau of Labor Statistics in 1980 reported that in construction, agriculture, and transportation industries the following rates of injury and illnesses were sustained for one hundred full-time workers: 15.7 in construction; 11.9 in agriculture; 9.4 in transportation. And, these rates are comparable and in one case higher than the 12.2 suffered by workers in the manufacturing sector.

However, as noted previously, these rates are not specific to chemical exposures and can therefore not be appropriately used to determine the scope of this standard.

It should be emphasized that the Agency does not believe that employees in other industries are not exposed to hazardous chemicals, or that they should not be in-

formed of those hazards. OSHA has merely exercised its discretion to establish rulemaking priorities, and chosen to first regulate those industries with the greatest demonstrated need. The promulgation of this final standard for the manufacturing SIC Codes ensures that hazard information will be routinely generated and available. Downstream employers will be receiving labeled containers that will indicate the presence of hazardous chemicals. Although not required for those employers outside SIC codes 20-39, the increased availability of material safety data sheets will also benefit them. Thus this standard will increase the general availability of hazard information in all of industry, and will establish the informational framework upon which standards dealing with other industries can be based, if necessary.

A number of participants supported the scope of the standard as proposed (Exs. 19-48, 19-62, 19-67, 19-85, 19-96, 19-106, 19-111, 19-124, 19-177, 19-199, 19-211, 19-214, 59; 83; 167; 181). For example, the American Iron and Steel Institute stated (Ex. 167):

> All workers with known significant potential exposure to hazardous chemicals should be afforded the protection of a hazard communication standard. However because of special conditions peculiar to other industries it may be necessary to develop separate vertical standards to assure that the regulation is cost-effective and germane to their particular workplaces.

However, many of the participants, particularly workers and worker representatives, believe that the scope should be expanded to cover all industries where employees are exposed to hazardous chemicals (See, for example, Exs. 19-5, 19-74, 19-109, 19-169, 19-180, 19-206, 34, 36, 62, 64, 122, 131, 152, and 180A). These participants presented examples of exposures to hazardous chemicals in industries outside SIC codes 20-39 to support their con-

tention that all industries should be covered in one standard (e.g. Ex. 31; Tr. 2197; 3089; 3922).

As stated previously, OSHA acknowledges that exposures to hazardous chemicals are occurring in other industries as well. A limited coverage of them is included in the final standard since all containers leaving the workplace of chemical manufacturers, importers, or distributors will be labeled, regardless of their intended destination. This will alert downstream users to the presence of hazardous chemicals, and the availability of material safety data sheets. The Agency contends that the focus of this standard should remain on the manufacturing sector since that is where the greatest number of chemical source injuries and illnesses are occurring. This focus will also serve to ensure that hazard information is being generated for chemicals produced or imported into this country, and this increased availability will benefit all industry sectors.

A few comments were received from employers in the manufacturing SIC codes, particularly the flavor and fragance industries and the distilled spirits industry, suggesting that their facilities be exempted from the standards (e.g. Exs. 19-63, 19-68, 19-77, 19-97, and 19-197). The primary reasons offered for this recommendation were that employee exposures to hazardous chemicals are limited in their plants, the industries are regulated by other Federal agencies, and the industries have voluntarily undertaken programs to protect their own employees.

Although employees in these industries may be exposed to fewer hazardous chemicals than employees in some other segments of manufacturing, the testimony and written submissions of their representatives verify that such exposures nevertheless do take place. For example, representatives of the flavor and fragrance industries indicated that ethylene oxide and hydrochloride acid

may be used in their facilities (Tr. 3425). These chemicals are both currently regulated by OSHA, and thus are considered to be hazardous under the provisions of the final standard. Likewise, employees in distilled spirits plants are exposed to ethyl alcohol (Ex. 19-68), which is also regulated by OSHA and thus considered to be hazardous under the final standard. To the extent that the numbers of hazardous chemicals are limited, the burden of complying with the standard will be reduced in comparison to the burden of compliance in other segments of the manufacturing industries where greater numbers of such chemicals are used. However, the presence of such chemicals indicate that hazard communication programs are needed.

The other Federal agencies which regulate these industries (i.e. the Food and Drug Administration and the Bureau of Alcohol, Tobacco and Firearms) do so to ensure the quality of the product for consumers, not to protect employees. OSHA has examined the potential for conflict and overlap of this final standard and regulations of these agencies. It appears that the primary area of potential concern is in the labeling requirements, and OSHA has explicitly addressed this concern in the final standard to avoid any duplication of effort or conflict. This issue will be addressed further in following sections of this preamble.

Implementation of voluntary activities in these industries is not unique since many manufacturers have indicated they have undertaken such programs (see, e.g., Exs. 19-85, 19-91, 19-124, and 19-160). In fact, OSHA assumed prior compliance for many manufacturers in its Regulatory Impact Analysis for the proposed standard (Ex. 17), and stated that companies with existing effective programs should be able to comply with the new performance standard without substantial modification of such programs (47 FR 12101). To the extent that the flavor and

fragrance industries and distilled spirits plants are already providing hazard information to their employees, the burdens of complying with this standard should be minimized.

Therefore, OSHA has determined that no conclusive evidence has been provided to exclude any industries within the manufacturing SIC codes from coverage by the standard.

One significant modification to the basic scope of the standard has been made in the final document, however, based on extensive comments in the public record. Under the proposed standard, OSHA did not explicitly cover importers or distributors, and raised the issue in the preamble of whether they 53287 should be covered by the final standard. At the time of the proposal, OSHA stated that explicit coverage may not be necessary because marketplace pressure exerted by manufacturers needing hazard information would, in fact, ensure that the importers and distributors made it available to their customers.

In response, the vast majority of the participants in the rulemaking believed that marketplace pressure would not be sufficient to ensure the availability of hazard information from importers or distributors (see, for example, Exs. 19-23, 19-51, 19-75, 19-89, 19-119, 19-143, 19-185, 36, 46, 47, 123, 125, 168, 180, 181, and L-16). Many based this conclusion on their past experiences in trying to obtain such information. For example, the Duriron Company, Inc. stated (Ex. 19-186):

> The Duriron Company, Inc. has maintained Material Safety Data Sheet (MSDS) files at all manufacturing locations for several years. Establishing these files has been very difficult. In some instances, several letters and telephone calls were required to obtain *any* information. Most of these problems have been with a middleman, especially repackagers.

The Boeing Company also addressed coverage of suppliers in their written comments (Ex. 19-109):

> * * * Marketplace pressure, as suggested in the preamble, is not an acceptable means by which to ensure that suppliers will pass on hazard warning information (specifically, Material Safety Data Sheets (MSDS's)) to users. This suggestion will only reinforce the current voluntary system which already relies on pressure from "the market", or users pressuring the suppliers and manufacturers for information. It is a cumbersome and ineffective system which we hope will not be sanctioned by OSHA under the guise of new terminology. "Suppliers" must be included in this regulation to ensure that information does flow from the manufacturer to the user * * *

The National Association of Chemical Distributors provided written comments to the record concerning their members' position regarding the responsibilities of distributors to pass on hazard information. Although they did not favor explicit coverage of distributors in the final standard, they did acknowledge responsibility for making such information available and expressed a willingness to do so (Ex. 19-213):

> NACD is submitting the following comments to help clarify the position of its members with respect to manufacturing and primary distribution versus secondary distribution particularly with regard to furnishing Material Safety Data Sheets. Where the material is repacked and sold in smaller quantities with no commingling of product, the distributor would pass on the manufacturer's safety data sheet to the end user. Where the distributor engages in blending or compounding, NACD would consider that a manufacturing process and agrees that the distributor should have the responsibility for providing the proper MSDS for the resulting product.

OSHA has determined that explicit coverage of distributors is necessary to ensure the proper transmittal of hazard information, and has included such provisions in the final standard.

The National Association of Photographic Manufacturers, Inc. expressed the views of many rulemaking participants in their comments on the coverage of importers (Ex. 29-75):

> Quite clearly, the chemical manufacturer is the best source of information as to the hazard posed by a particular chemical. This applies whether the manufacturer is domestic or foreign. There appears to us to be no significant reason why an importer cannot obtain an MSDS from a foreign chemical manufacturer and be required to provide it to his customers in the United States in the same manner as would be required of a domestic chemical manufacturer.
>
> Under the proposed standard, employers in S.I.C. codes 20 through 39 would be required to comply with the proposed rule. Those domestic employers who use imported chemicals would be seriously disadvantaged if they were not able to obtain an MSDS from an importer or directly from a foreign chemical manufacturer. In this regard, we believe requiring an MSDS could easily be made a condition for importation much as the labeling requirements of the European Economic Community as outlined on page 12100 of the Federal Register notice.
>
> In addition to preventing a potential breach in the Hazard Communication Program to the detriment of U.S. employees, the above action would tend to equalize the economic disadvantages that would otherwise be present if U.S. manufacturers were required to bear the cost of OSHA compliance while foreign manufacturers were exempt from that cost. U.S.

> manufacturers are already bearing the cost of compliance with foreign regulations, i.e. those of the EEC. Foreign manufacturers would also enjoy a competitive advantage in developing third country markets since they would not be concerned with the OSHA Hazard Communication Program.

The European Communities submitted a written comment to the record which indicated that the proposal as published could create an unnecessary obstacle to trade if applied to importers (Ex. 19-216). In particular, they noted that "the list of requirements is somewhat exhaustive and would be followed by all manufacturers in the EC. Some manufacturers in the EC supply information to their employees under the provisions of national legislation which is flexible in allowing various methods for information to be transmitted to the employee. This achieves the same objective while allowing flexibility in application and avoids the danger of creating unnecessary obstacles to trade within the terms of Art. 2.1 of the GATT Agreement on Technical Barriers." The OSHA standard is also flexible in prescribing the manner and methods of hazard communication. European Economic Community (EEC) labels will be accepted if they include the label components as required by the OSHA standard. Moreover, the importers would not be required to do anything more than is required of domestic manufacturers. Based on comments such as those submitted by the National Association of Photographic Manufacturers, this explicit requirement is necessary to ensure the safety and health of American workers. Therefore, under the final standard, importers will be required to supply the same hazard information that chemical manufacturers are required to provide to their manufacturing customers. As Dr. Myra Kartstadt reported, coverage of importers is especially appropriate since a number of chemicals in use in the United States are totally imported from abroad (Ex. 52). Some commenters suggested that this coverage will be feasible and in fact reflects current practice:

> The experience at Schering with importers has demonstrated an ability and a willingness to obtain material safety data sheets (MSDS's) from overseas manufacturers.
>
> (Schering-Plough Corporation, Ex. 19-199)

Accordingly, the OSHA standard does not constitute a barrier of trade to foreign manufacturers. However, OSHA acknowledges the long-term benefit of maximum recognition of hazard warnings, especially in the case of containers leaving the workplace which go into interstate and international commerce. The development of internationally agreed standards would make possible the broadest recognition of the indentified hazards while avoiding the creation of technical barriers to trade and reducing the costs of dissemination of hazard information by elimination of duplicative requirements which could otherwise apply to a chemical in commerce. As noted previously, these regulations will be reviewed on a regular basis with regard to similar requirements which may be evolving in the United States and in foreign countries.

b. *Laboratories.* Another issue raised by the scope of the proposal which generated significant comment was the coverage of laboratories in manufacturing facilities. In the proposed 53288 standard, laboratories in the manufacturing SIC Codes would have been subject to the provisions with one exception. The proposal exempted "chemicals being developed and used only in research laboratories." This exemption was primarily intended to apply to new chemicals being developed in research activities, since they would not have been tested to determine their hazards, and would generally be present in the laboratory for short periods of time, in small quantities. Although some people interpreted the proposal as exempting all research laboratories, this was not, in fact what the provision stated.

A number of participants commented on the coverage of laboratories, and many favored exempting all chemi-

cals in all laboratories (see, for example, Exs. 19-4, 19-43, 19-61, 19-111, 19-146, 19-167, 19-199, 67, 148, 181; Tr. 212, 530). These participants generally cited as reasons for exempting them from the scope of this standard the facts that laboratory environments are different from the rest of the manufacturing facility in which they are located; that laboratories are generally supervised by highly trained, technically qualified individuals; and that OSHA has previously requested comments and information on the appropriateness of promulgating a standard to cover laboratories exclusively.

Although it may be true that laboratory facilities have different types of operations than the rest of a manufacturing plant, that does not appear to be a sufficient rationale for exempting them from coverage. The fact remains that employees in these laboratories are exposed to hazardous chemicals, and are at risk of experiencing adverse health effects from such exposures. As stated by the Celanese Corporation (Ex. 19-185):

> * * * The workers in the laboratory use hazardous chemicals and need to be informed of what the hazards are and appropriate work practices to minimize the risks from these hazards * * *

The BLS statistics for the manufacturing sector's incidence of occupational illnesses cannot be broken down to separate the incidence in laboratories versus other operations. Although specific evidence concerning the incidence of injuries and illnesses in laboratories was not submitted to the public record, there is testimony that indicates that laboratories may be just as hazardous environments as manufacturing in general. For example, Mr. Frank Baird testified concerning his experience working in a research laboratory. During his employment, he was unknowingly exposed to high levels of mercury vapors and contracted mercury poisoning. As he stated (Tr. 1845):

> The mercury I worked with came in unmarked glass bottles. There were no warning labels, no

> markings saying poison. It didn't even have a label saying mercury. The Greeks knew that mercury was poisonous, the Romans knew that mercury was poisonous, even my employers knew that the mercury was poisonous, but they may not have known just how poisonous its vapors were or how badly my exposure exceeded the toxic limits set by the U.S. recommended standard in 1942.

Undoubtedly, the laboratory Mr. Baird worked in, which was at an academic institution, was under the supervision of highly trained, technically qualified individuals. However, the fact that such laboratory supervisors are trained in conducting chemical research or other laboratory operations does not mean that they are adequately trained in, or concerned with, the hazards of the substances they are working with. As Dr. Daniel Teitelbaum testified (Tr. 159):

> In my own experience as a university professor, having worked in research laboratories and run research projects, I can say to you that many research scientists are less than informed about the toxicity of the materials with which they work in spite of their doctoral degrees.

Furthermore, although supervisory personnel may be technically trained, there are frequently workers in laboratories who are engaged in cleaning glass containers or other tasks where they are exposed to a myriad of hazardous chemicals without appropriate training. For example, Melena Barkman of the United Steelworkers of America stated (Ex. 103):

> We strongly disagree that all laboratory workers are highly skilled and trained. Many lab workers clean the area and wash equipment with little or no instruction. Many laboratory technicians have only two years training. Even medical technologists and research chemists are not trained in safety; i.e. proper storage and ventilation.

> OSHA must provide protection for all laboratory workers. Even where chemicals are properly labeled, material safety data sheets must be made available at the site. In view of the recognized hazards in laboratories, anything less than inclusion would be negligence.

The third argument made for exempting laboratories from coverage is the possibility of a vertical OSHA standard for laboratories. At this time, that rulemaking is in the pre-proposal stage and the Agency has no way of definitely determining when such a standard will be completed, or what it will contain. By including laboratories in this rule, OSHA can assure more immediate protection for laboratory workers in SIC codes 20 through 39. When the laboratory standard is promulgated in final form, the Agency will assure that all laboratory facilities have the same duties in regards to hazard communication programs for employees. In the meantime, the record for this rulemaking indicates a need for hazard communication in laboratories, and the final standard includes provisions to protect these employees.

OSHA recognizes that due to the large number of small containers in laboratories, and the types of operations performed, all of the provisions of the final hazard communication standard may not be appropriately applied to those facilities. This view is supported by a videotape submitted by the Pharmaceutical Manufacturers Association (Ex. 67) and examples of laboratory containers submitted to OSHA (Ex. 68). Therefore, we have incorporated a limited coverage of laboratories in the final standard.

It appears that most containers of chemicals in laboratories are either labeled, or are under the control of someone who removes a chemical from a labeled container to put it in other vessels, and thus is aware of the identity of the subsantance involved (Tr. 966). Therefore, with

respect to labeling, OSHA has simply required that in laboratories the employer ensure that labels on incoming containers are not removed or defaced.

A similarly limited approach has been incorporated for material safety data sheets as well. Any labeled container entering the laboratory workplace would be accompanied by an MSDS. Accordingly, the standard requires that any MSDSs received by the employer are to be maintained in the work area, and employees are to have access to them.

The employer will be required to fully implement the training provisions of the hazard communication standard for laboratory employees. Since, according to the record, much of this training is already being provided, this should not be burdensome for these employers (Tr. 220; 2300-03). The final standard permits employers to train employees with regard to general classes of hazards, as long as the substance-specific information is available to employees in written form. This type of training should be easily accomplished and yet will provide protection for laboratory workers and increase their awareness of hazards in their work areas. Training of this type is particularly important in laboratories, where employees are 53289 typically exposed to large numbers of chemicals in small quantities.

One additional argument related to the coverage of laboratories concerned manufacturers of research chemicals. The Scientific Apparatus Manufacturers Association, for example, testified that such manufacturers should be exempted from the provisions of the standard (Tr. 215), for essentially the same reasons as they supported exemption of laboratories. Where these facilities are actually laboratories, they would be covered by the standard in the modified approach used for laboratories as already described. It should be noted that manufacturers of chemicals for use in laboratories outside the manufacturing SIC Codes—for example, in university re-

search laboratories—would not be required to send material safety data sheets to these facilities. In addition, since the final standard allows employers to keep the required information in the work area in some other form than as an MSDS, these employers would be able to more readily meet the information requirements for their own employees. Therefore, no specific exemption has been included in the final standard for these facilities.

c. *Coverage by Other Federal Agencies.* Another issue of concern to a number of participants in the rulemaking is potentially duplicative coverage by OSHA and other Federal agencies with labeling regulations. Although OSHA stated in the preamble to the proposed standard that it did not intend to require any additional labeling for products covered by other Agencies, the proposal itself did not contain a specific exemption for such products.

Many commenters in the record did not agree with this approach, and preferred that OSHA provide specific exemptions for products labeled under other Federal laws and for manufactured articles (see, for example, Exs. 19-46, 19-63, 19-67, 19-68, 19-77, 19-81, 19-110, 19-124, 19-157, 19-158, 19-196, 163, 170, and 171).

In response to these concerns, the final standard explicitly states that its labeling requirements do not apply to certain substances. In particular, the labeling requirements of this standard do not apply to:

(1) Pesticides which are labeled in accordance with the requirements of the Environmental Protection Agency;

(2) Foods, food additives, color additives, drugs and cosmetics, including materials intended for use as ingredients in such products (e.g., flavors and fragrances), which are labeled in accordance with the requirements of the Food and Drug Administration.

(3) Distilled spirits (beverage alcohols), wines, and malt beverages intended for nonindustrial use when sub-

ject to the labeling requirements of the Bureau of Alcohol, Tobacco, and Firearms; and,

(4) Consumer products and hazardous substances which are subject to consumer product safety standards or labeling requirements of the Consumer Product Safety Commission.

The applicable definitions are those provided by the governing statutes and regulations.

In providing exemptions from the labeling requirements of this standard for these substances, OSHA is mindful of the fact that they are already being labeled pursuant to the authorities of other Federal agencies. In the case of pesticides, the purpose of such labeling is mainly the protection of workers exposed to the pesticide. In the case of the other substances, the purpose of the labels is more general consumer protection. Nevertheless, the required labels generally provide for the listing of chemical identities and, in some cases, hazard warnings as well. Because of the nature of the substances, they are regulated by the other Federal agencies to assure that they are safe for consumer use, and to the extent that workers are exposed to the substances in a manner comparable to that of ordinary consumers, there is no need for additional OSHA labeling requirements.

OSHA recognizes, however, that there may be situations where worker exposure is significantly greater than that of consumers, and that under these circumstances, substances which are safe for contemplated consumer use may pose unique hazards in the workplace. For this reason, the standard's exclusion is limited to labeling. It does not exempt employers from the material safety data sheet and training requirements of the standard with respect to any of these substances, provided of course that the substance otherwise meets the standard's definition of hazardous chemical. Moreover, it should be stressed that these labeling exclusions are for the enumerated sub-

stances only. To the extent that an employer uses other chemicals, such as in the manufacture or processing of these substances, they are fully subject to the requirements of this standard.

The standard does, however, provide complete exclusion for four categories of substances: (1) Hazardous waste, as defined and regulated by the Environmental Protection Agency; (2) tobacco and tobacco products; (3) wood and wood products; and (4) articles. The Environmental Protection Agency regulates the disposal of hazardous waste, and their rules include requirements for labeling and training. Thus OSHA has decided that when a chemical is considered to be a hazardous waste by the EPA, it will be exempt from the provisions of this standard. Tobacco and tobacco products are intended for use by consumers and are not commonly thought of as chemicals for the purposes of this kind of regulation. See, e.g., their exclusion from the Toxic Substances Control Act, 15 U.S.C. 2602(B)(iii). Wood and wood products are likewise excluded for comparable reasons. While both kinds of materials are no doubt flammable and may pose other hazards as well under some circumstances, their identity within the workplace is unmistakable and their characteristic hazards should be well known to the workers involved. Accordingly, their exclusion from this standard is appropriate. In the case of preserved wood, i.e. wood that has been impregnated by pesticides, OSHA has previously determined that while the preserved wood is not itself a pesticide, EPA is nevertheless primarily responsible for its regulation (see Ex. 19-157, Att. I, American Wood Preservers Institute). In other respects, it is not different from ordinary wood. Therefore, the wood itself will be covered by the wood exclusion, while the pesticide used to preserve it will be covered by the labeling exclusion provided for FIFRA-regulated pesticides. It should be noted again that, as with the other exclusions, nonexcluded chemicals which are used in conjunc-

tion with tobacco or wood products, or are known to be present as impurities in those materials, are covered by this standard.

The final exclusion is for "articles" which are defined essentially as manufactured items which are formed into a specific shape or design for a particular end-use function and which will not release or otherwise result in exposure to a hazardous chemical under normal conditions of use. The specific definition is similar to that used by EPA for purposes of excluding articles from certain TSCA reporting requirements. See, e.g. 40 CFR 704.95 (c) (1). An example of an article would be a piece of equipment or furniture. These obviously do not meet the common conception of a chemical and are not appropriate subjects for a hazard communication standard directed at chemical hazards. Of course, chemicals used in the manufacture or use of an article are 53290 covered by this standard unless otherwise excluded.

No explicit exclusion is provided for substances regulated by the Department of Transportation under the Hazardous Materials Transportation Act. This standard is directed towards hazard communication within the workplace of employers in SIC Codes 20-39 (i.e. manufacturers), whereas the Department of Transportation regulations are directed toward the packaging and labeling of hazardous materials while they are being transported in commerce. Therefore, although both sets of requirements necessarily apply to many, if not all, of the same substances, there should be no unnecessary duplication of regulatory effort. It is true that this standard requires chemical manufacturers and importers to provide material safety data sheets and labeled containers to downstream employers who purchase their products, and requires chemical distributors who act as middlemen in the chain of distribution to provide the same information to their industrial customers in SIC 20-39. This is necessary to assure that the required hazard information is dis-

seminated throughout the distribution chain so that all covered workplaces may have adequate hazard communication programs. Conflict with the DOT regulations is avoided by requiring, in the labeling section of this standard, that the labeling of containers leaving the workplace shall be done in a manner which does not conflict with the requirements of the Hazardous Materials Transportation Act and regulations issued under that Act. This standard is thereby harmonized with the DOT regulations, specifically including 49 CFR 172.401(6), which states that "no person may offer for transportation and no carrier may transport a package bearing any marking or label which by its color, design, or shape could be confused with or conflict with a label prescribed by this part" (i.e. the DOT labeling requirement).

It should be noted that the Environmental Protection Agency (EPA) has statutory authority to require labeling of chemicals under the Toxic Substances Control Act (TSCA). This authority has not been exercised to date except in very limited circumstances. As long as any such labels specified in the future include the information OSHA requires, the TSCA labels would also suffice to comply with this standard's labeling provisions.

Mixtures. The final major issue involving the scope and application of the proposed standard is the coverage of mixtures. The determination of mixtures to be covered by the standard is particularly critical since most chemicals produced and used in the manufacturing sector are mixtures, not "pure" substances. In order to ensure necessary protection for employees, these mixtures must be covered by the standard. For organizational purposes, the coverage of mixtures has been moved from the "scope and application" paragraph of the standard to the newly created "hazard determination" paragraph.

Under the proposed standard, a mixture would have been covered in one of two ways. First of all, if the mixture itself had been objectively evaluated for its hazard

potential, e.g. toxicity tests had been performed or the flashpoint had been determined, the results of such testing were to be used to indicate the hazard of the mixture. This requirement did not imply that manufacturers had to test the mixtures themselves. As with individual substances, the manufacturer could rely on available scientifically valid evidence published in other sources reporting the hazards of the mixture. The manufacturer was required to list on the material safety data sheet the ingredients known to contribute to the hazards that the mixture posed according to the available scientific evidence, but did not have to list ingredients which may be hazardous themselves, but do not exhibit their known hazards in the particular mixture. For example, a mixture containing small concentrations of acetone, a highly flammable liquid under most circumstances, may be tested and found to be not flammable. In this situation, the chemical manufacturer would not have been required to designate the mixture as a flammable hazard nor to list acetone because of its flammability.

Where no such objective information on the hazard of the mixture as a whole entity was available, the manufacturer was to identify which components comprising greater than one percent of the composition were hazardous in their own right, and list each of these on the material safety data sheet. In other words, where no objective scientific information existed on the mixture's hazard, it would be assumed to have the same hazards as its component parts. The proposal also included a provision indicating that the Assistant Secretary reserved the right to require ingredients to be listed when present in concentrations less than one percent when they were deemed to be particularly hazardous.

The rationale of the proposal was that when the hazard of a mixture is unknown, all hazardous ingredients should be indicated on the material safety data sheet. The user would then have the most complete information available

to predict the potential hazards of the mixture. The one percent exclusion was included to absolve the employer from having to evaluate and list chemicals present in mixtures in small quantities, which are not likely to result in substantial exposures.

Considerable comments were submitted to the record on this approach. OSHA stated in the preamble to the proposed standard that the one percent cut-off was justified on the basis that it appeared to be protective and was considered to be reasonable by a number of affected parties. Some participants, such as Armco, Inc., agreed with this finding (Ex. 19-146):

> Like the OSHA proposal, Armco has used the one percent (1%) criteria for our specific chemical products whenever they have been involved in MSDS requests. We feel this is a reasonable cutoff value.

Similarly, West Point Pepperell stated that (Ex. 19-150):

> The 1% cut-off for disclosure of hazardous chemicals and hazard labeling for chemical products seems to be a reasonable and effective safeguard for a great number and variety of circumstances.

However, a number of participants felt that one percent was too high for certain chronic hazards, and that some provision should be made in the final standard for identifying such hazards in smaller quantities automatically, rather than waiting for completion so substance-specific rulemakings. For example, West Point Pepperell continued their comments on the one percent rule as follows:

> The proposed standard also provides for the imposition of lower cut-off levels by rulemaking procedures. However, there is a group of substances, most of which have already been named in rulemaking by OSHA as potential human carcinogens, which may already need lower cut-off levels. We suggest that the proposed standard require the disclosure, through

> the use of an MSDS, of any part of a chemical product which may contain or release some amount, no matter how small, of any substance for which OSHA has successfully completed rulemaking, naming the substance as a potential human carcinogen, toxic substance or harmful chemical agent which may cause a disease of grave and extreme consequence * * *

Other participants were concerned about the extent of protection provided by the one percent exclusion for other types of substances as well. The 53291 Department of Defense addressed the issue as follows (Ex. 19-148):

> We recognize the practical need for limiting the applicability of the standard with regard to hazardous ingredients of a mixture. We believe, however, that there is significant health risk involved when carcinogens, strong sensitizers, or other compounds with extremely low permissible exposure limits are present in mixtures in concentrations below 1%. For example, the free isocyanates present in certain paints are usually present in a concentration less than one percent, yet failure to list the isocyanates on the Material Safety Data Sheets could result in a significant hazard going unnoticed. We suggest that the standard require the disclosure of all hazardous chemicals comprising less than 1% of a mixture (by weight or volume) if those chemicals, under typical use conditions, may result in exposure above the permissible exposure limit, or if those chemicals are known to be carcinogens, mutagens, teratogens or sensitizers when in low concentrations.

Several interested parties further suggested that hazardous chemicals, or any ingredient whether hazardous or not, be listed regardless of their concentration in the mixture. For example:

> Other areas of concern include Section A3 of the standard which does not require chemicals found in

quantities of less than one percent to be identified as a constituent of a product. We believe that all hazardous constituents product (sic) should be identified since some materials in quantities less than one percent can pose a health hazard. A case in point would be the use of hydrazine in some sealing materials as an oxygen scavenger. Depending upon the method of application, quantities of hydrazine less than one percent of the total volume of the material can have a significant impact in determining the safe method for using that particular product.

(Caterpillar Tractor Company, Ex. 19-201)

I would like to draw an analogy if I could to death certificates. Death certificates, in the old sense, used to list merely the immediate cause of death and that was felt to be sufficient.

Now, of course, somebody could walk across the street, be hit by a car and have lung tumors. Then there was some feeling that approximate cause of death should be included. And now I think the burden of medical thinking is that all co-existing conditions should be listed so that one gets a complete picture of what is happening with an individual. We would suggest the same thing for the constituents of a formulation or a mixture and that is that particularly in the absence of knowledge about synergistic interactions between trace amounts of compounds and larger amounts, as well as an inability perhaps by all parties to appreciate the significance of chronic disease as opposed to acute conditions. That those are not judgments that should be left up to discretion.

(Dr. E. Silbergeld, Environmental Defense Fund, Tr. 2247-8)

OSHA limits the scope of its rule even further by excluding from labeling any substance that makes up less than 1% of a mixture. This exclusion based on

> percentage makes no sense at all. If a chemical is highly toxic, or if it causes cancer after long-term exposure to small amounts, then it may be extremely hazardous even when present in amounts far below 1%. Likewise, if workers are exposed to large amounts of a mixture, they may be exposed to considerable amounts of a toxic constituent that makes up less than 1% of the mixture. Requiring a complete rulemaking proceeding to inform workers for each case when the 1% rule provides inadequate protection is a great burden on OSHA—one that will lead to more numerous and complex regulations, rather then to clear and effective regulation. The solution must be to require inclusion of *all* known contents on the label.
>
> (Dr. E. Bergmann, Public Citizens Health Research Group, Ex. 19-172)

Additional examples of rulemaking participants who believed the one percent exclusion was appropriate in some, if not all instances, or that the cutoff should be lowered or eliminated to permit greater disclosure, can be found in Exs. 19-51, 19-60, 19-67, 19-83, 19-89, 19-90, 19-109, 19-146, 19-148, 19-150, 19-192, 19-193, 19-214, and 167.

In contrast to these cited comments which indicated that the one percent rule incorporated by OSHA in the proposed standard was reasonable or not protective enough, several commenters stated that the one percent cut-off was too low (Exs. 19-64, 19-176). More commonly, the suggestion was made that the "cut-off" approach should be replaced by an evaluation of which chemicals "substantially contribute" to the hazard of the mixture without specifying a cut-off. The following comment from BASF Wyandotte Corporation is representative of many of those received from chemical manufacturers (Ex. 19-167):

> The proposal provides that mixtures containing at least one percent of a hazardous chemical would

be considered hazardous unless the "mixture has been evaluated as a whole and found not to be hazardous". While we agree with this approach, we are concerned with the language in the preamble which indicates that testing must be performed on a mixture before its hazard can be evaluated. We believe it is often possible to evaluate the acute hazards of a mixture without testing. Such evaluation would be based on information in the scientific literature, knowledge of the chemical interactions, and testing results of similar products. We recommend reasonable scientific judgment be permitted to evaluate the hazards of mixtures. Where a mixture is found to be hazardous, only those components that contribute substantially to the hazard(s) should be required to be identified.

For examples of similar comments, see Exs. 19(8, 27, 44, 48, 54, 63, 79, 91, 140, 145, 162, 170, 185, 204, 206, 210, 215), 181, 182.

Some of the comments relating to testing appear to have been based on a misinterpretation of the hazard evaluation provision in the proposal, especially as it pertains to mixtures. As described above, the manufacturer would not have been required to perform tests on the mixture. Objective scientific data related to the mixture as a whole could be used to determine its hazards. Given that objective scientific data are generally unavailable, OSHA anticipated that most mixtures would be considered to have the same hazards as their constituents and allowed for this in the March, 1982, proposal.

In reviewing the comments related to the assessment of mixtures, OSHA has concluded that some delineation can appropriately be made between assessments for physical hazard potential, and those performed to determine health hazard potential. For example, in presenting its views on the issue, Merck & Co., Inc. stated that: "* * * a 1% mixture of a flammable, combustible, or reactive chemical in an inert diluent may hardly be "hazardous"

given the properties of the components" (Ex. 19-52). The Nalco Chemical Company addressed the need to differentiate between health and physical hazards (Ex. 19-55):

> We can understand the need for some type of cut off such as a "1% cut-off" for certain types of hazards. We do not agree that it should apply to all "hazardous" ingredients in a formulation. Specifically, we do not believe the "1% cut-off" should apply to hazardous ingredients such as when the ingredient is combustible, flammable, corrosive, explosive, an oxidizer or unstable. The "1% cut-off" should apply *only to health hazards* such as carcinogenicity, etc.

Similarly, the Pharmaceutical Manufacturers Association (Ex. 19-110) also addressed the difference between health and safety and safety hazards:

> While the one percent standard may be appropriate for some types of materials such as a very highly toxic or carcinogenic material, it is not appropriate in most cases. An otherwise flammable substance, for instance, would become inert if diluted with water to a one percent mixture. While a manufacturer may know that a mixture is not hazardous, the regulation would require that it be labeled as hazardous unless tests were conducted to show otherwise.

OSHA has therefore concluded that a percentage cut-off for physical hazards is not necessary. The physical hazard potential of a chemical may be diminished or neutralized by the other 53292 constituents of the mixture and this may be known to the employer as a result of experience in using the mixture or actual testing. For that reason, the final standard gives the chemical manufacturer, importer, or employer greater latitude to determine that a mixture does not pose the physical hazards of its ingredients.

Participants objecting to the one percent cut-off were not able to provide similar convincing evidence regarding

the appropriateness of the approach for health hazards. In fact, some of the examples they did cite demonstrated a misunderstanding of the provision and chemical covered. For example, Master Chemical Corporation stated that (Ex. 19-87):

> Chemical identity information is particularly useless when required for mixtures. Very often there is no correlation between the toxicity of the individual components in pure form and the overall blend of a mixture. Consider the simple example of hydrochloric acid and sodium hydroxide. Both of these chemicals are extremely corrosive, and if mishandled, are capable of doing serious, even fatal, injury to living organisms. However, when combined in appropriate concentrations the resulting mixture is sodium chloride (table salt) and water, both relatively innocuous substances that certainly have nowhere near the hazard potential of either ingredient individually.

In order for a hazardous chemical to be considered a mixture, the components have to retain their chemical identity after being combined. The example cited by Master Chemical involves a chemical reaction, where the final product is completely different chemically than the component parts. Therefore, it would not be regulated under the hazard communication standard as a mixture with unknown hazards requiring the listing of hazardous ingredients.

Other participants cited examples of chemicals in the workplace where the one percent cut-off may result in fairly innocuous mixtures being considered hazardous. The National Association of Manufacturers (Ex. 19-209) objected to the one percent cut-off and cited the following:

> Thus the NAM asserts that the one percent cut-off point, as contained in the Proposed Rule, is an ineffective trigger point. To support this assertion, we offer the following:

The one percent cutoff, in itself, means little

—Somewhere in the workplace, vinegar can likely be found. Vinegar contains 5% acetic acid.

—At the plant first aid station, one can find hydrogen peroxide at 3%.

—The list is long, far too long to be covered in detail but includes such mixtures as window cleaners, bleach, most fertilizers, household ammonia and even concentrated sodium chloride.

Note:—Although we recognize that OSHA has exempted food and drugs, we offer these examples as illustrative of this situation.

As the NAM noted, OSHA was cognizant of mixtures that are food, drugs, or cosmetics brought into the workplace for the consumption of employees, and proposed to exempt them from coverage by the standard. Furthermore, the final standard includes additional exemptions for other types of consumer products which are labeled under the regulations of other Federal agencies. Therefore, we do not find that these examples support the contention that using the one percent cut-off for predicting the health hazards of chemicals in the workplace is not appropriate.

Conversely, the examples cited by participants that indicated that one percent may not be protective enough with respect to health hazards in some situations are persuasive. As quoted above, there are situations where components present in concentrations less than one percent may present hazards to exposed employees. Admittedly, the situation may also be reversed, where the health hazard of a component is diminished by the mixture. However, in the absence of objective data supporting this, the prudent approach to protecting employees from health hazards remains in identifying the hazards present in the mixture.

OSHA therefore rejects the suggestions of a number of participants that the chemical manufacturer or importer be permitted to list only those ingredients which "contribute substantially" to the health hazard of the mixture. Although this is appropriate, and is permitted, when the hazards of the mixture as a whole are known, it is not appropriate when the hazards of the mixture are not known. Limiting disclosure in the latter case to those chemicals which have been subjectively determined to "contribute substantially" to the essentially unknown hazards of the mixture does not provide adequate protection for employees. This approach would introduce an additional layer of judgment which will serve to decrease the amount of information which is included on the material safety data sheet. Given the state of uncertain scientific knowledge with regard to synergistic effects in particular, it better serves the purpose of hazard communication to simply disclose those constituents which are hazardous in and of themselves.

The positions of the various parties in the rulemaking, as discussed above, range from disclosure of all ingredients, whether hazardous or not, to disclosure of those which contribute substantially to the hazard of the mixture, based on the assessment of the employer as to hazards of that mixture. The latter approach does not appear to meet the objective of ensuring that employers and employees will receive the most complete information possible under this standard. The approach suggested by others, disclosure of ingredients whether or not they are hazardous, is broader than necessary to provide protection to employees.

OSHA has made several changes to the proposed provision in this final standard in an attempt to accommodate the various concerns of the rulemaking participants, while ensuring the protection of employees exposed to mixtures. First of all, a distinction has been made in the determination procedures required for physical hazards versus health hazards. For physical hazards, the chemical manu-

facturer may use whatever scientifically valid data is available to judge whether or not the mixture will have the same hazards as its ingredients which potentially pose physical hazards. This should alleviate the concerns of some parties, particularly regarding the flammability or combustibility of mixtures where the flammable or combustible component is diluted to render its effect inert.

For health hazards, the one percent cut-off for mixtures where the health hazard potential of the whole mixture is not known will apply. Although this may result in what some might consider to be overprotection, OSHA concludes that it is necessary to ensure adequate protection in all cases. Chemicals identified as carcinogens under the hazard determination provisions of this standard will have to be listed when present in quantities greater than 0.1%. In addition, if the employer has reason to believe that an existing permissible exposure limit for a component present in quantities of less than one percent may be exceeded under normal conditions of use, or that such a component could present a serious health hazard in such quantities, that component will also be required to be listed. Because the cut-off for carcinogens has been lowered, and listing is required when a chemical manufacturer, importer, or employer knows that an ingredient poses a serious health hazard in concentrations of less than 1% the provision relating to lowering the cut-off in individual cases by rulemaking has been eliminated. The Assistant Secretary has the authority to issue separate rules for specific substances in any event.

53293 The provisions regarding mixtures in the final standard can be found in a new paragraph (d) entitled "Hazard determination." Listing requirements for ingredients are in paragraph (g) on "Material safety data sheets."

2. *Definitions.* The proposed standard included a number of definitions for terms used in the provisions, and OSHA received many comments suggesting revisions to

them, or requesting that additional definitions be provided.

Several commenters suggested that OSHA exempt "articles" from the scope of the standard (Exs. 19-47, 19-73, 19-76, 19-166, 19-209, and 19-220). The purpose of this exemption is to ensure that items which may contain hazardous chemicals, but in such a manner that employees won't be exposed to them, not be included in the hazard communication programs. Examples of such items would be nuts and bolts or tools. The exemption has been added to the final standard and a definition was added as well. It was further suggested that OSHA adopt the definition for "article" used by the Environmental Protection Agency (EPA) under the Toxic Substances Control Act (TSCA) (Ex. 19-73). OSHA fund that the definition used by EPA was appropriate for this standard in part, but that it was necessary to modify it for purposes of ensuring protection for employees. The EPA definition is essentially as follows: "article" means a manufactured item: (i) Which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use, and (iii) which has either so change of chemical composition during its end use or only those changes of composition which have no commercial purpose separate from that of the article.

OSHA has adopted parts (i) and (ii) of EPA's definition, but has changed (iii) to read: "Which does not release, or otherwise result in exposure to, a hazardous chemical under normal conditions of use." This is more appropriate for OSHA's hazard communication standard because some items considered to be exempted articles under TSCA may result in employee exposures to hazardous chemicals during their use, and the hazards of those chemicals should be communicated to the employees. For example, the ACTWU (Ex. 111) described a situation involving fabrics in common use which are treated with

permanent press resins which release formaldehyde when handled. Workers engaged in making clothing from such fabrics should be informed about the nature and identity of their formaldehyde exposures. The fabric would probably be an exempted article under EPA's definition, but normal use of it exposes employees to a hazardous chemical. Therefore, the definition has been modified to ensure that in this type of situation, hazard information is transmitted to employees and downstream employers.

Several commenters suggested that the definition for "chemical manufacturer" be modified to refer to an "employer" in SIC Codes 20 through 39 producing chemicals for use or distribution, rather than an "establishment" as proposed (Exs. 19-76, 19-160, 19-162, and 19-220). These commenters felt this should be done because the Occupational Safety and Health Act refers to employers, and this standard should be consistent. This change has been made, and a definition of "produce" has also been added to clarify the scope. "Produce" means to manufacture, process, formulate, or repackage.

OSHA proposed to require the rules of nomenclature of the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) to designate the "chemical name" of a substance. A number of commenters suggested that in some cases, a simpler name is generally used and will allow access to the scientific literature, which is the primary purpose of requiring the chemical name (Exs. 19-62, 19-85, 19-135, 19-145, 19-162, 19-185, and 19-194). For example, the National Paint and Coatings Association stated (Ex. 19-62):

> There are many other cases where a commonly recognized name is far more meaningful to employees, toxicologists, and industrial hygienists. Even a highly trained investigator would be dismayed by an MSDS showing 1,3,4,-metheno-2H-Cyclo-buta (c,d) pentalen- 2- one- a,3,3a,4,5,5a,6- decachloroctahydro-

> but he would recognize readily its common name of Kepone.

The NPCA continued to explain that their suggested modification was to allow exceptions which would permit easier access to toxicity information, and not to allow indiscriminate use of common names in lieu of chemical names in all situations.

OSHA has modified the definition of "chemical name" in the final standard to allow for this limited exception in certain prescribed, circumstances, i.e. "a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation."

In the proposed standard, OSHA included a definition for "combustible" which was consistent with the Agency's definitions in related safety standards. The definition included a breakdown of combustible liquids into classes designated by flashpoint ranges.

Some commenters suggested that OSHA's definition of "combustible" should be consistent with those of various other groups, such as NIOSH, the Department of Transportation, and the National Fire Protection Associaion (e.g. Exs. 19-23, 19-46, 19-69, and 19-73), or that OSHA should allow any commonly used definitions. Although it would be desirable for all organizations to have uniform definitions, since there is no universally agreed upon definition, at this point it appears to be more important to be internally consistent, i.e. that OSHA define "combustible" the same way wherever the term appears in the Agency's standards. Therefore, the flashpoint range used in the proposal remains the same in the final standard. However, in response to suggestions from other commenters that the class breakdown is unnecessary for purposes of this standard, we have simplified the definition by removing the classes and simply noting the lower and upper limits on the flashpoints considered to designate a liquid

as being "combustible (e.g. Exs. 19-43, 19-49, 19-62, and 19-71).

There were also several suggestions that a "compressed gas" is a property hazard, rather than a safety and health hazard, and should thus be deleted from the final standard (Exs. 19-43, 19-141, 19-152, and 19-188). In addition, commenters stated that it should be deleted because the gas should be evaluated for its own hazardous properties, not because it is compressed (e.g. Ex. 19-220). OSHA does not agree with these suggestions for deletion, and has included "compressed gas" as a hazard to be covered by the standard. The gas should certainly be evaluated for its own hazards, but by compressing the gas into a cylinder, other hazards become possible due to leaks or ruptures of the containers. Employees should be informed of these types of hazards as well.

The majority of the comments received on the definition for "container" related to stationary process equipment. The proposed definition excluded pipes and piping systems from the labeling requirements, but would have required employers to label reaction vessels and other process equipment. This was objected to by many participants (e.g. Exs. 19 (54, 59, 60, 72, 84, 96, 115, 142, 156, 164, 188, 214, and A-6). For example, Celanese Corporation stated (Ex. 19-185):

> The proposed standard defines "container" to include reaction vessels. A labeling/posting requirement for reaction vessels, 53294 particularly batch-type reactors, will result in a significant labor burden on employers without any real additional protection of the workers. Since the chemical and physical properties are constantly changing, any single label would be inaccurate in relying any hazard information to the worker.

In the preamble to the proposed standard, OSHA recognized the potential difficulties of labeling such con-

tainers (47 FR 12104), and invited comments on appropriate alternatives, such as a process sheet providing the required information and available to employees in their work area. OSHA did receive information in response to this request (e.g. Exs. 136, 149, 164), and the labeling provisions of the final standard have been modified to allow such alternatives. This issue is discussed at greater length in the section of the preamble dealing with labels and other forms of warning. This modification should provide employees with the visual hazard reminder which is a necessary part of a comprehensive hazard communication program, but allows for feasibility problems which may be encountered by employers attempting to comply with the labeling requirements. The definition for "container" remains as proposed since the problems addressed by the commenters are not really definitional in character and have been substantially satisfied by allowing, but not requiring, alternatives to labeling. Those employers who choose not to use such alternatives will still be required to label stationary process equipment. Comments dealing with the labeling of pipes are also discussed in the portion of the preamble dealing with labeling issues.

Several commenters believe that the proposed definition of "designated representative" was too broad (Exs. 19-54, 19-126, 19-155, 19-160, and 19-196). For example, O M Scott & Sons stated (Ex. 19-126):

> We suggest that stricter qualifications be placed upon the designated representative. For example, the representative should have demonstrated expertise in industrial hygiene, toxicology, law, or other professionally related field, and must have a legitimate reason for representing the employee.

OSHA does not agree and has concluded that employees have the right to determine who will represent them and exercise their rights under this standard. The definition

has not been modified in accordance with these recommendations to limit representation to professionally trained individuals.

A number of commenters, particularly employee organizations, believe that unions should automatically be considered designated representatives of employees, without the requirement for individual written authorizations (e.g. Exs. 58, 63, 80, 101, and 111). For example, a representative of the International Union of Electrical, Radio and Machine Workers testified (Ex. 58):

> * * * (T)he union needs *automatic* access to MSDS in order to develop a prevention oriented health and safety program. Decades of public health practice demonstrate that problems can be prevented, only when they can be anticipated before people get sick. Union access to MSDS can facilitate this goal. Also, few occupational health problems are limited to one person. If there's a problem generally a number of workers are affected. Full union access to all information allows for a more comprehensive analysis of hazardous situations and will result in greater health promotion and a higher degree of worker protection.

OSHA agrees that recognized or certified collective bargaining agents should be given access to the materials developed under this standard for employees without obtaining individual written authorizations, and the definition of "designated representative" has been modified accordingly. Union safety and health representatives will be able to use the material safety data sheets and other materials generated under this standard to train workers and otherwise contribute to reducing the occurrence of chemical source injuries and illnesses. This is consistent with OSHA's current policy regarding "designated representative" under the records access regulation (29 CFR 1910.20).

As discussed under the scope section of this preamble, OSHA has added requirements for a "distributor" to ensure that hazard information is made available to their customers purchasing hazardous chemicals. A definition of distributor has been added to the standard as well.

In the proposal, "employee" was defined as workers in covered workplaces where they may be exposed to hazardous chemicals under normal operating conditions or foreseeable emergencies. This was further clarified by stating certain job categories which would be expected to be covered, and those which would not generally meet the test of exposure under normal operating conditions or forseeable emergencies. However, this clarification did not actually exclude any workers since the triggering factor was whether or not their job performance routinely involves potential exposure to hazardous chemicals. Thus a security guard routinely posted at the gate to the plant may not be potentially exposed during the course of his normal work, but a similar guard posted inside the plant may be. The latter employee would then come under the provisions of the standard. The purpose of indicating job categories was to clarify that, generally speaking, office workers or others in manufacturing who are not exposed are not covered by the standard. The definition of "employee" is essentially the same as the one used in the proposal.

A few comments were received which addressed the issue of exposure (Exs. 19-76, 19-118, and 19-147), being primarily concerned that employees who are not routinely exposed need not be included. OSHA has concluded that the issue of exposure as related to coverage is already adequately addressed in the proposed definition. To further clarify the matter, however, a definition has been added for "exposure" (described below).

Several comments were also received suggesting that the definition of "employee" be modified to indicate that

only employees employed by the employer owning the facility should be included (Exs. 19-81, 19-52, 19-214, 19-37, and 109). Since employers can only be directly responsible for the safety and health of their own employees, the definition has been clarified in the final standard to indicate that an employer need only inform his/her own employees. However, in response to further comments requesting coverage of contractor employees (Exs. 19-124; 31), provision has been added to the hazard communication program requirements to ensure that manufacturing employers inform contractor employers of the nature and identities of any hazards their workers may encounter in the facility, and to suggest appropriate protective measures. OSHA cannot require employers to inform their contractor's employees of the hazards in their workplace. However, in order for the contractor to apprise his/her employees, information will have to be obtained from the employer. Therefore, this addition will ensure the contractor receives the necessary information.

A number of commenters suggested that OSHA add a definition for "exposure" or "exposed." A definition similar to that used in OSHA's *Access to Employee Exposure and Medical Records* regulation (29 CFR 1910.20) has been incorporated into the final standard in response to these requests. The definition is not exactly the same because this standard already includes exemptions and limitations on coverage that the "access" regulation seeks to limit solely through the exposure definition. Furthermore, the "access" regulation definition refers to "past" 53295 exposure due to the records retention aspect of the standard. This standard only deals with current and future exposures, so the reference to the past has been omitted. In addition, the "access" regulation refers to toxic substances and harmful physical agent, whereas this hazard communication standard is directed to "hazardous chemicals."

Many of the comments on the definitions for "flammable" were the same as those already discussed for "combustible," i.e. that the definitions should be consistent with those of other organizations (e.g. Department of Transportation; National Fire Protection Association), and that the definition for "flammable liquid" need not be broken down into classes (e.g. Exs. 19-43, 19-47, 19-69, 19-76, 19-111, 19-135, and 19-185). As discussed previously regarding the definition for "combustible", OSHA has concluded that the definitions for "flammable" should remain consistent with those in other OSHA standards dealing with flammable substances. The classes have been eliminated from the flammable liquid definition, however, maintaining the lower and upper flashpoint values as proposed.

In the proposal, OSHA defined ammonia as a flammable gas, although it doesn't meet the definitional criteria provided. This decision was based on Agency experience, which indicated that ammonia is involved in fires and is flammable under some conditions. In response to requests during the hearing, OSHA submitted to the record documentation establishing that ammonia is a flammable gas (Ex. 151).

The definition of ammonia as a flammable gas was the one most frequently commented on during the rulemaking proceeding. The commenters generally objected to the classification of ammonia as flammable, and cited years of experience, primarily with refrigeration systems, without fires occurring (e.g. Exs. 19 (9, 13, 18, 21, 29, 34, 38, 66, 83, 95, 103, 128, 141, 179, and 215)). Although OSHA has concluded that ammonia may be flammable in some situations, the specific designation of it as such as been eliminated from the final standard since it does not meet the general definition for a flammable gas.

A number of comments were received which suggested that the definition for "hazardous chemical" was too

broad, and should include some limitation on coverage according to the risk involved (Exs. 19-43, 19-62, 19-76, 19-92, 19-96, 19-166, 19-220, 19A-10 and 19A-18). The definition of "hazardous chemical" was intentionally broad in the proposal, to ensure that all potential hazards are considered when a chemical is being evaluated. The concept of risk based on the degree of exposure may be introduced by the employer when training employees, but should not be a factor used to limit the amount of information presented on a material safety data sheet. This is particularly important when the MSDS is being transmitted to downstream employers where exposure situations are different and unknown to the chemical manufacturer or importer preparing the MSDS. (A number of manufacturers commented on their inability to know downstream situations in objecting to providing certain categories of information on the material safety data sheets, e.g. (Exs. 19-63, 19-91, 19-96, 19-98, 19-111, 19-124, 19-158, and 19-194).

Similar comments were received concerning the definition of "health hazard" (e.g. Exs. 19 (43, 49, 59, 63, 69, 77, 84, 110, 116, 176, 188, 205, and 220). For Example, the Synthetic Organic Chemical Manufacturers Association, Inc. suggested (Ex. 19-44):

> * * * OSHA should amend the definition of "health hazard" by adding criteria which better define the concept of a hazard, such as a requirement of likely exposure at levels sufficient to create a significant risk of material health impairment.

As stated above, OSHA does not agree that it is appropriate to include concepts of degree of exposure or risk into the definition for health hazard. The standard already limits hazard communication duties to those chemicals to which employees are exposed under normal conditions of use or in foreseeable emergencies. Furthermore, employers must train their employees regarding

the risks involved in the particular exposure situation in their work areas. For purposes of defining what chemicals are a potential "health hazard," a broad approach must be followed to ensure employee protection. And since manufacturers or importers cannot know whether there will be a "significant risk" in downstream uses, through information on potential health hazards must be provided.

The definition for "health hazard" has been modified somewhat by including in it the target organ classification of hazards that was proposed in Appendix A. This should clarify the required scope of hazards to be evaluated. In addition, it has been clarified that health hazards to be included are those for which there is scientific (i.e. statistically significant) evidence based on at least one positive study conducted in accordance with established scientific principles.

A number of participants suggested that definitions for acute health hazards, which are generally well-defined, be adopted from the American National Standards Institute (ANSI) standard for precautionary labeling (e.g., Exs. 19-48, 19-57, 19-59, 19-84, 19-91, 19-126, 19-140, 19-147, 19-167, 19-205, 19-214, and 182). OSHA has concluded that adoption of these acute health hazard definitions will clarify the coverage of the final standard, and has incorporated the definitions used in the latest ANSI labeling standard (Ex. 182A). These definitions may be found in Appendix A, and cover "toxic," "highly toxic," "corrosive," "irritant," and "sensitizer."

In addition, OSHA has determined that a definition criteria for what constitutes a carcinogen for purposes of this standard is necessary since there may be differences of opinion concerning certain substances (Tr. 1057-1067; 3928). OSHA has concluded that a chemical is to be identified as one which poses a carcinogenic haz-

ard when either the National Toxicology Program, the International Agency for Research on Cancer, or OSHA itself, publishes a finding that the available information indicates the chemical is a potential or confirmed carcinogen. Employers can determine whether a chemical meets these by consulting the publications of these organizations, or by looking it up in the NIOSH *Registry of Toxic Effects of Chemical Substances* (RTECS). RTECS entries indicate the findings of NTP, IARC, and OSHA.

A definition for "immediate use" has been added to the final standard at the request of several commenters (Exs. 19-196, 19-199, and 19-211). The definition clarifies that to qualify a container for the "immediate use" exemption from labeling, it must be under the control of the person who transferred materials into it, and used during the same work shift as it was transferred.

As importers have been added to the coverage of the standard, a definition for "importer" has been included as well. In addition, OSHA has responded to commenters requesting that "label," "manufacturing purchaser," "material safety data sheet," and "mixture" be defined (e.g., Exs. 19-46, 19-64, 19-91, and 19-177) by adding definitions for those terms.

OSHA uses the term "physical hazard" in the final standard, as contrasted with "health hazard" which is already defined, and has added a definition for that term as well.

In order to clarify the information permitted to be withheld as a trade secret under the final standard, OSHA has used and defined the term "specific 53296 chemical identity." The term refers to the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information which reveals the precise chemical designation of the substance.

In the preamble to the proposal, OSHA stated that it considered the definition for "trade secret" to be that

taken from the Restatement of Torts (47 FR 12105). In response to several requests, OSHA has specifically included a slightly modified version of that definition in the final standard (Exs. 19-76, 19-91, and 19-185).

Several commenters also suggested that use of the term "transport" in the definition of "use" may be in conflict with the regulations of the Department of Transportation. The intent of the term was to refer to transport within a facility, and the definition of "use" has been changed to read "transfer."

3. *Hazard determination and communication program—Hazard determination.* Once the chemical manufacturer or importer has assessed the hazards of the chemicals they produce, the specific communication provisions of the standard apply only to those chemicals found to be "hazardous." Thus the hazard evaluation and determination process is critical to the successful implementation of an effective hazard communication program.

The determination of what constitutes a hazardous chemical for purposes of this standard was the most difficult issue discussed in the rulemaking record. It is clear from OSHA's analysis of the record that there is a considerable range of opinion concerning the appropriate approach. It is also clear that the uncertainty and disagreement among the participants relates to the determination of health hazards, not physical hazards. The evaluative procedures for determination of the physical hazard potential of chemicals are fairly objective and straightforward, and these procedures did not generate much comment from rulemaking participants. Therefore, this discussion will relate solely to the question of what constitutes a health hazard under the provisions of the final hazard communications standard.

The term "health hazard" was defined very broadly in the proposal as a "chemical which, upon exposure, may

result in the occurrence of acute or chronic health effects in employees." This definition was further expanded upon in Appendix A, which included a discussion of the difficulty of defining health hazards, and a categorization of health effects according to target organ. Included in the categorization were examples of both the signs and symptoms of overexposure and some specific substances which may affect those target organs. Under paragraph (c) of the proposed standard, "Hazard determination and communication program," the chemical manufacturer was to be held responsible for adequately ascertaining the scientifically well-established health effects to the chemical involved. Appendix B provided guidelines for this evaluation, in the form of available information sources. No set procedures were prescribed, and thus the evaluation was performance-oriented, with the performance criterion being the appropriate identification of the scientifically well-established data. A proper evaluation would result in generating the appropriate hazard information to complete the labels and material safety data sheets, and to transmit to employees in training sessions.

Prior to the publication of the proposal, OSHA had examined various methods of determining the hazard of a chemical. This included review of existing regulations of other Government agencies, examination of commonly used textbooks, discussions with health professionals, and study of various lists of hazardous chemicals. The Agency's conclusion was that the hazard evaluation procedure involves a large degree of professional judgment in every situation, and that, as one hearing participant stated, there is no "cookbook" approach to determining the hazardous properties of a substance (Tr. 2062). Reliance solely on the few commonly used criteria (such as those used in the ANSI standard on labeling) would tend to eliminate coverage of a significant number of acute effects, as well as the majority of chronic effects.

On the other hand, a reliance on lists of substances could exclude too many hazardous chemicals from coverage. In addition, lists of chemicals do not provide hazard information, so an evaluation of hazardous effects still has to be performed once a list has been established as the scope of chemicals covered.

A number of comments were received which indicated that hazard communication should not be required unless there is a "significant risk" or "unreasonable risk" of the employee's experiencing an adverse health effect under normal conditions of use (see, e.g. Exs. 19 (43, 49, 62, 69, 77, 91, 111, 119, 185), 182, L-15). Upon questioning during the public hearing, some advocates of this approach further elaborated on this position by stating that exposure above the permissible exposure limit would be an appropriate delineation to determine "significant risk" (Tr. 1255; 2481).

OSHA does not agree that such an approach should be included in the final standard. The purpose of hazard communication is to ensure the disclosure of information about the possible hazards of chemicals in the workplace before the worker is exposed to them, and thus is at risk of experiencing adverse health effects. The hazard potential does not change even though the risk of experiencing health effects does vary with the degree of exposure. Therefore, although, for example, the material safety date sheet for sulfuric acid should always indicate its potential to be corrosive, the employer can indicate in the training program what the degree of exposure actually is in a given work operation. The chemical manufacturer or importer, in making hazard determinations, should evaluate and communicate information concerning all the potential hazards associated with a chemical, whereas the employer may supplement this information by instructing employees on the specific nature and degree of hazards they are likely to encounter in their particular exposure situations.

The Agency determined that the most comprehensive approach would be to require evaluation of all chemicals, not some pre-selected list of substances, and to require reporting of all types of health effects, not the limited few which are precisely defined.

Some participants in the rulemaking endorsed the proposal's performance-oriented approach to hazard evaluations and judged the state of scientific knowledge to be such that no more specific procedures would be warranted or appropriate (see Exs. 19 (48, 88, 111, 116, 143, 169, 214); 28; 165; 167). For example, Bausch and Lomb stated in their written submission (Ex. 19-143):

> The hazard determination process should remain performance oriented. Attempting to create a precise step-by-step hazard determination procedure is difficult and most likely would not be flexible enough to address the variety of situations as effectively and as inexpensively as the existing proposal. Creating a list of chemicals is equally undesirable because the list would require frequent updating and would always be subject to controversy as to why materials are included or not included on the list.

Similarly, in response to a question from OSHA regarding the procedures to follow in performing a hazard evaluation, Mr. Gary Hancock, a toxicologist with the Bethlehem Steel Corporation, gave the following response (Tr. 2082-3):

> 53297 Well, with respect to specific guidelines or criteria for doing a hazard determination, as a toxicologist I don't feel that you can have—use a cookbook approach in performing that type of an exercise. I think that hazard determination is really not an exact scientific process. That there is really a lot of art there and because of that it really requires that professional judgment play an important role. Again,

> I don't believe that you can set up specific criteria or guidelines. Perhaps general guidance in the way of, of course, anybody would do a literature review, but how to use that data that you get from literature review and the data that you gather in your interactions with other health professionals, industrial hygienists, occupational physicians about the conditions of use, all of that plays a role in hazard determination process. It is not always the same. It depends upon the situation and the chemical, and, of course, a number of other factors that might play a role. So I don't think you can specify that type of thing.

Other participants criticized the performance orientation. They suggested that hazard evaluations would be inconsistent under the proposed approach, and thus employees would not have equivalent protection in all workplaces. As an alternative, they suggested that specific procedures be included in the final standard, or that lists of substances to be covered should be developed or adopted (see e.g. Exs. 19 (65, 74, 89, 109, 148, 166, 175, A-2, A-3, A-5, A-11); 31; 33; 36; 46; 58; 62; 63; 64; 122; 123; 125; 131; 168; 180). For example, the AFL-CIO stated in their written testimony (Ex. 36):

> Perhaps even more deficient than the proposed standard's hazard definitions are its determination procedures. While the definitions are inadequate, specific requirements or even guidance outlining an adequate hazard determination are absent entirely. The absence of specific requirements or guidance will, in our view, result in a compliance and enforcement nightmare with neither manufacturers nor compliance officers having any idea of what procedures constitute compliance.
>
> The final standard must contain guidance or requirements for what constitutes an adequate hazard determination drawing from current industry practice as reflected in the record of this rulemaking.

Some industry representatives suggested that either OSHA or an independent scientific panel should review toxicological data, particularly in the area of chronic health hazards, and establish a list of substances which should be labeled. For example, the Adhesive and Sealants Council wrote (Ex. 19-54):

> Secondly, the determination of health hazards of specific chemical substances is a complicated task that could have a significant impact on smaller companies that lack sophisticated testing or references resources. In addition, ASC does not concur with the suggested use of reference sources cited in Appendix B as a tool for hazard determination. The user of such reference sources could easily misinterpret data unless specifically trained in toxicological matters, and some of the reference sources cite results of toxicity studies that may lack scientific validity. ASC would recommend instead that OSHA develop its own list of specific chemicals that require labeling for chronic hazards under the proposed Standard.

During the course of the public hearings, OSHA questioned many of the participants as to the methods they use to evaluate hazardous chemicals in the course of their positions as health professionals working for employers, employee organizations, government agencies, or public interest groups (see, e.g. Tr. 193, 309, 523, 546, 589, 909-11, 1279, 1324, 1369, 1458, 1682, 2062, 2090, 2209, 2245, 2416, 3662-3, 3717). The Agency intended to review these submissions concerning procedures currently employed by these groups to determine if some generally agreed upon procedures could be established. This attempt to solicit such information produced some general criteria which could be incorporated into the standard, but no specific procedures for evaluating hazard data were provided by any of the participants. For example, Dr. Myra Karstadt, who is Executive Director of the Environmental Cancer Information Center, was one of the critics of the perform-

ance approach to hazard evaluation under the proposed standard. In response to a request that she submit the criteria she uses to determine the hazards of substances, she responded (Ex. L-2):

> The ECIC is *not* an organization subject to the Hazard Communication proposed rule. Therefore, the strictly enunciated procedures which should be applied to chemical manufacturers and processors and others similarly situated are not applicable to the ECIC. The procedures I use to answer questions are, therefore, of no direct consequence to the hearings and should not be taken in any way to justify application of the so-called "performance" criteria for toxicity determination set out in the Hazard Communication proposed rule * * *
>
> * * * the criterion which is always uppermost in ECIC toxicity review is identification and use of the best data available to provide an objective and scientifically accurate response to the inquiry received by the ECIC. Procedures used may involve accessing computerized data bases (as. Medline), direct reference to review volumes or articles, conversations with scientists expert in the area in question, etc. ECIC maintains flexibility in the procedures used to assess toxicity, but very complete records are kept wherever that would seem appropriate, especially for controversial topics or for any matter where reference materials are not obvious and easily obtained by anyone with reasonable expertise in the field.

Mr. Michael Wright of the United Steelworkers of America contended that there is an invariable procedure to follow when evaluating hazards, but admitted that the procedures he follows himself vary with the chemical (Tr. 879-80):

> I think there is an invariable procedure and the difference between the 15 minute cases and the six

hour cases are how much we've looked at that chemical before. I don't have to go back to a literature search on methyl ethyl ketone either, because I've already done that enumerable times, and I can depend on my past work. It's a brand new chemical. Then, it does take longer and I do need to go through all the sources * * *

* * * I thing it might be worth—kind of a cascade system. For example, if you're evaluating carcinogenicity and if the first thing I can consult is the NTP list, and it's on the list, that's enough for me to say it's a potential carcinogen. I don't at that point necessarily have to consult all of the other lists. But if I can find it on the NTP list, then I would go to the IARC list. I would go to a variety of other sources and ultimately I would go to MEDLARS and TOX lines, which I think are really the best sources for all of us, cause they're comprehensive.

Under the New York state right-to-know law, the state is involved in reviewing toxicity information to prepare material safety data sheets for distribution. OSHA asked Assemblyman Joseph Pillittere, who testified during the public hearing in Houston, to submit for the record the procedures used by the state to prepare these sheets. The information he submitted revealed that the staff reviews the professional literature (standard sources such as NIOSH documents, the Merck Index, etc.), and prepares the sheets, which are then subjected to several levels of expert review (Ex. 129). No specific procedures for evaluating the data are apparently used.

ICI Americas, Inc. responded to the question regarding specific procedures by describing what they have termed "active 'intelligence gathering' activities" (Ex. 150):

These 'intelligence gathering' activities include:

—Initiation of toxicity tests on new chemicals;

—Close collaboration with ICI Americas' UK parent company to secure relevant information known to the parent. (Our parent company maintains one of the largest industrial toxicology laboratories in the world.);

—Scrutiny of the trade and scientific literature, including relevant government publications e.g. those published by NIOSH, NTP, Section 8e notices submitted to EPA, etc.;

53298 —Review of Material Safety Data Sheets obtained from chemical suppliers;

—Participation in consortia of chemical manufacturers funding testing programs on commodity chemicals of significance to ICI Americas;

—Funding of research in toxicology through membership of the Chemical Industry Institute of Toxicology.

When information is received from such activities on a chemical used by ICI Americas, a detailed review of the data is conducted to assess its validity and evaluate its significance. This review is conducted by professional toxicologists on ICI Americas' staff, in conjunction with medical, industrial hygiene and product safety personnel.

It can be concluded from each of these responses—which represent a scientific organization, a union, a state government, and a manufacturer—that hazard determinations inevitably requires professional judgment to be used in evaluating what information is to be looked at and what conclusions to draw from it. At the same time, although the record does not provide examples of specific evaluation procedures used by participants, there are a number of sources of information which are routinely referred to by them to obtain hazard information, or to help them make an initial determination that a substance is hazardous.

Some of those sources were mentioned in the quotes above—i.e. computerized data bases, NIOSH documents, and standard text books. There are also repeated indications that reviewers customarily check to see if a chemical is an OSHA regulated substance or appears on the ACGIH TLV List (Tr. 877, 1105). For determination of carcinogenicity, the IARC Monographs and the NTP list were mentioned (Exs. 122, 180A, L-5; Tr. 877).

In regards to mandating computerized literature searches, OSHA has determined that this is not appropriate. When a search is performed, a list of article abstracts is generated. The person searching the literature still has to evaluate the data to determine what the hazards are—the search does not result in a list of hazards to be reported. As Dr. Parkinson of the United Steelworkers of America stated (Tr. 910-11):

> You have to look at the content and that's really the difficult area. We've mentioned Medlars and Toxline but, of course, they just give you the title of the paper and usually an abstract of what the paper says and in my experience, unfortunately, one really has to go back to the original paper to evaluate how the work was done.
>
> This is being [sic] one of the major problems with a lot of the bibliographies, for instance, that NIOSH has produced in the past that they haven't been weighted in any way be a professional evaluation of the original work. So that when I'm faced with that problem, I inevitably do pull out the original papers and have a look at them if I can get hold of them.

The professional judgment that is required to evaluate the hazards is also a necessary part of determining the extent of search required to adequately ascertain those hazards. As Mr. Wright described above (Tr. 879-80), a "cascade" system is employed. Chemicals with well-known hazards need not be as vigorously investigated as

those which are more obscure, or which are being actively studied to determine their health effects. The evaluator is responsible for ensuring that the determination is accurate, but the means to achieve that are best left to professional judgment. The appropriateness of mandating the use of NIOSH documents is also questionable for similar reasons. The term "NIOSH documents" includes a wide variety of publications from criteria documents to health hazard evaluations. Though they may be useful in a hazard evaluation, determination of whether they should be used must be left to professional judgment.

In any event, the incorporation of lists of substances as a floor is quite different than mandatory sources to be searched. Lists such as the OSHA PEL list and the ACGIH list contain a number of well-recognized hazardous chemical. "Computerized data bases" and "NIOSH documents" are bona fide information sources that must be consulted in many evaluative procedures, but mandating their use in all cases is not appropriate.

The most substantive recommended alternative to the hazard evaluation procedures included in the proposed standard were provided in a post-hearing submission from the AFL-CIO, United Steelworkers of America, International Chemical Workers Union, and the United Auto Workers (Ex. 180A). According to this union submission, adequate chemical identity and hazard information will only be provided if three conditions are met: (1) The requirement to disclose chemical identity must be independent of the manufacturer's hazard determination procedures; (2) the standard must include specific definitions for what constitutes a health hazard; and (3) the standard must require a thorough hazard determination by the manufacturer.

The terms of the first conditions are met in large part through the "Access to Employee Exposure and Medical

Records" regulation (29 CFR 1910.20), which requires employers to make records of chemical identity available to employees and designated representatives of employees. This disclosure obligation is independent of whether or not the employer believes the chemical to be hazardous, provided the chemical falls within the rule's definition of "toxic substance" which includes any chemical listed in NIOSH's *Registry to Toxic Effects of Chemical Substances* (RTECS), which includes over 40,000 chemicals. The purpose of this standard, however, is to provide information about chemicals which are in fact hazardous. The goal, therefore, is to assure that the standard will result in complete and accurate hazard determinations with respect to identifiable hazards, not just potential ones. The narrower scope of this standard is therefore appropriate.

For the second condition, the unions have suggested that definitions be added to Appendix A for determination of what constitutes a health hazard. They believe that these definitions should include the full range of health effects, and considerations of animal or other laboratory evidence. In addition, since determination of carcinogenicity appears to be one of the biggest areas of disagreement between interested parties, they suggested that findings of confirmed or suspected carcinogenicity by IARC be sufficient to warrant communication of these hazards under this standard. As explained above, OSHA has responded favorably to these comments by adding certain definitions for acute hazards and for carcinogens.

Under the third condition, the unions concede that "there may not be one 'cook-book' procedure for determining all hazards posed by a chemical." However, they maintain that there are certain standard references which many health professionals routinely consider and consult in order to evaluate the hazards of chemicals. They state: "According to industry witnesses and other witnesses, OSHA standards, ACGIH Threshold Limit Val-

ues, NIOSH publications, monographs of the International Agency for Research on Cancer, and computerized bibliographic data bases of the National Library of Medicine are routinely reviewed in the evaluation of chemical hazards (Tr. 177, 851, 1054, 1105, 3157, 3306, 3427)."

With respect to this third condition, OSHA agrees that although there may not be established hazard evaluation procedures that are appropriate for determining the hazards of every chemical, some minimal criteria should be established so that certain chemicals will be regarded uniformly as hazards by all evaluators. NIOSH also addressed 53299 the need for some minimal criteria in their written testimony (Ex. 31):

> . . . This may require the mandatory use of certain documents such as the NTP Annual Report on Carcinogens, ACGIH TLV's, NIOSH documents, OSHA regulations, and their respective updates in making such a determination. NIOSH believes that this type of approach is essential to producing an effective rule and that this consistent approach is preferable in the long term to the proposed rule.

NIOSH reiterated this recommendation in their post-hearing submission (Ex. L-5). They stated that "certain documents by themselves represent a scientific consensus as to a particular chemical's carcinogenicity, mutagenicity or heratogenicity."

In the final standard, OSHA has attempted to resolve the differences of opinion regarding the performance approach to hazard evaluation, and to define some criteria that will establish a minimum number of substances to be covered.

First, we have added paragraph (d) to the final standard, entitled "Hazard determination." In this paragraph we have clarified the responsibility of the manufacturer or importer to thoroughly evaluate the hazards. The per-

formance approach was never intended to permit them to perform an inadequate hazard evaluation, but this new paragraph affirmatively states the duty.

In addition, we have established a "floor"—a minimum number of chemicals required to be covered. In any situation, the manufacturer or importer is required to treat chemicals regulated by OSHA or listed by the ACGIH on their TLV list as being hazardous for purposes of this standard. In addition, any chemical which is listed by the NTP or IARC as a suspected or confirmed carcinogen is also to be treated as a potential carcinogen under this standard.

Third, as previously stated, we have also added specific definitions on acute health hazards to Appendix A, which responds to the second union condition noted above. These definitions are taken from the latest draft of the revised ANSI standard for precautionary labeling (Ex. 182A).

In Appendix B, we have clarified the principal criteria to be applied in complying with the hazard determination requirement. First of all, the employer is to evaluate animal data as well as human data. Secondly, if a positive study conducted according to established scientific principles, and resulting in statistically significant findings of an adverse health effect is available, manufacturers or importers must report that effect whether they agree with it or not. They need not state the finding as a conclusion they agree with, but must report it nevertheless. They are also free to report any negative data which they believe is relevant to determining the hazard of the chemical. OSHA believes that this approach will ensure that employees and downstream employers are provided sufficient information to assess the potential hazards of working with the chemical.

These additional provisions provide minimum standards for health hazard evaluations, and will therefore

better ensure their validity. Yet professional judgment is allowed and encouraged as the primary tool for evaluation.

Hazard Communication Program. Under the proposed standard, each employer would have been required to develop and implement a hazard communication program. The program was to include the procedures the employer would use to determine which chemicals are hazardous; a list of those chemicals identified as hazardous; and the methods the employer would use to comply with the requirement of the proposal with regards to labels, material safety data sheets, information and training, and preparing employees to safely perform non-routine tasks (e.g. emergency pipe repairs).

OSHA designed the hazard communication program to be a comprehensive approach to apprising employees of the hazards they are exposed to, as well as providing them with information concerning the protective measures to be used to reduce these hazards. In a conference report on chemical hazard warnings published by the Conservation Foundation, the purpose of a hazard communication program was explained as follows (Ex. 18-2):

> A workplace hazard communication program should inform employees about the nature of all the hazards to which they may be exposed, and also persuade employees to take the actions necessary to protect themselves against risk. While workers need to be responsibly informed about the hazards to which they may be exposed, they should neither be overwarned or underwarned. For any hazards identified, they should be offered remedies for protective action. The nature of hazards and information on the appropriate hazard control procedures should be conveyed through labels and other components of workplace labeling systems.

In general, participants in the rulemaking endorsed the elements of the hazard communication program. For example, PPG Industries, Inc. stated (Ex. 19-85):

> PPG is in general agreement with the elements of a hazard communication program as outlined in this section. We believe this section effectively places the responsibility for definition of individual work place hazard information requirements with the employer.

Similarly, the Boeing Company also endorsed the performance goals listed for the hazard communication program (Ex. 19-109):

> We applaud OSHA's proposal to use a performance approach with respect to the hazards communication program. There is such widespread diversity among manufacturing industries that the only feasible way to accommodate training, labeling, and information availability is to leave the details to those who can best address these differences: The chemical users themselves. OSHA's performance goals (c)(2)-(4) provide sufficient and appropriate control over this aspect of hazard communications.

Although the proposed standard did not require that the hazard communication program be written, OSHA did raise that alternative in the preamble as an issue for comment. As the Agency stated at that time, a written plan would provide a structure upon which to evaluate programs. Employers would be able to establish in the plans the criteria they used in developing their programs, as well as the means used to meet those criteria. The written program would also serve as a useful reference for employees. Having the program in writing would make it easier to determine if the intent of the standard was being fulfilled.

It was anticipated by OSHA that even in the absence of specific requirements for written plans, prudent em-

ployers would prepare them. The plan would not have to be detailed or lengthy, but preparation of it would ensure that all of the elements were adequately addressed.

A number of participants stated that written plans should not be explicitly required (Exs. 19-63, 19-71, 19-72, 19-88, 19-91, 19-110, 19-158, 19-185, 19-188, 19-209, 19-214, Tr. 1313). For example, a representative from the Graphic Arts Technical Foundation testified (Tr. 1313):

> Having a written program provides no real function, in our opinion, except to demonstrate its availability. The key to a hazard communication program is its implementation and continued use in developing employee awareness through training. To the extent that the training is structured well and periodically evaluated for effectiveness, a written program does not add additional benefits.

Conversely, many employer and employee representatives felt that a written plan should be an integral part of a performance-based hazard communication program (Exs. 19-46, 19-51, 19-79, 19-89, 19-96, 19-98, 19-111, 19- 53300 116, 19-124, 19-143, 19-170, 19-196, 19-204, 19-220L, 63, 106, 107, 122, 123, 125, 157, 164, 167, and 180).

For example, the American Petroleum Institute stated in their written submission (Ex. 19-111):

> Further, API has consistently supported the concept that each employer should have a written program to detail how workplace hazards are identified, evaluated, and communicated to employees. In addition to using a written program to enable a company to internally evaluate the effectiveness of its hazard communication program, the requirement for a written program will help assure better compliance with the regulation.

Similarly, Kaiser Aluminum and Chemical Corporation endorsed a written program approach as well (Ex. 19-196):

> A written hazard communication program is essential:
>
> (1) To establish and document accountability,
>
> (2) To serve as a useful reference for employees, and
>
> (3) To delineate a benchmark for internal auditing.

A joint union post-hearing submission also addressed the need for documenting the hazard communication program in writing (Ex. 180A):

> Under the proposed standard, the employer's hazard communication program must include the procedures the employer will use to determine hazards of chemicals which he produces. But there is no requirement that the employer's hazard determination procedures be reduced to writing as part of the hazard communication program. Thus, in reality, it is a meaningless requirement.
>
> The hazard determination procedures utilized by the employer are central to the OSHA proposal. In the absence of a determination that a chemical is hazardous, no information need be provided.
>
> Since the proposal does not envision uniform hazard determination requirements, employers are free to devise their own procedures which are sure to differ in form and outcome (Tr. 12, 579, 682, 1063, 1066, 1260, 3027). The only means to evaluate the validity of these procedures is to require they be reduced to writing and made available to employees, designated representatives and OSHA (Exs. 36, 101).

Given the considerable support for requiring that the hazard communication program be written, and the fact that having such a written program will be beneficial to the successful implementation of the final standard for the reasons given in the above statements, OSHA has determined that written programs will be required. This should not measurably increase the compliance burden of employers since written materials would have been prepared voluntarily by most of them anyway.

One provision of the hazard communication program under the proposed standard required a list of hazardous chemicals in the workplace. The list was in essence an index or inventory of hazardous chemicals in the workplace for which material safety data sheets should be available, and containers of which should be labeled. The list was to serve as a check point for the employer and the employee to ensure that all of the hazardous chemicals in the workplace had the appropriate information available. The list could be compiled by the identity used on the container labels—ingredients did not have to be specifically listed, as long as the associated material safety data sheet provided the specific chemical identities. As stated in the preamble to the proposal, OSHA's intention was that the list be maintained in a current fashion, to indicate chemicals currently present in the workplace, but that outdated lists need not be kept.

A number of comments were received concerning the need to generate a list, as well as addressing the maintenance of and access to such lists.

Several participants suggested that lists should be permitted to be assembled for work areas, rather than for the entire work place (Exs. 19-43, 19-44, 19-111, 19-124, 19-145, 60, 125). The combined work area lists would thus comprise the master list of workplace chemicals. Given that some workplaces are very large, and employees in a particular work area would be better served by

having a list specific to that area, the final standard has been modified to permit this approach.

Many participants objected to generating and maintaining a list of hazardous chemicals, indicating that the material safety data sheets themselves will suffice as an indication of which substances in the workplace are hazardous (Exs. 19 (44, 48, 54, 57, 59, 62, 69, 71, 76, and others)). For example, Monsanto Company stated (Ex. 19-147):

> Monsanto feels that lists of chemical substances in the workplace are unnecessary since the product identification and hazard information are all included on the Material Safety Data Sheet and available to the employee. Lists are difficult to maintain up-to-date and give casual observers the wrong impression that listing of substances is equated to exposure, which of course, it is not. Lists can be made by anyone who wishes to make them from the MSDSs available.

It is difficult to understand how employers could assure themselves that each hazardous chemical in a workplace had been identified, and appropriate hazard information prepared, without generating and maintaining a list. Furthermore, for the employees' benefit, there should be a list available so if a material is present in their work area, and is not accompanied by a material safety data sheet, they can check the list to assure themselves that the chemical is not considered hazardous and thus the absence of an MSDS is appropriate. As indicated in the proposal, the list should be useful to the employer in other aspects of establishing occupational health programs as well. For example, plant industrial hygienists could use it to develop priority schemes for sampling strategies or physicians could use it to highlight which chemicals merit closer examination. Therefore, in the final standard OSHA has maintained the requirement that a list be included in the hazard communication program.

A number of participants suggested that it should be maintained for some time period, or specifically in accordance with § 1910.20 (e.g. Exs. 19-89, 19-109, 19-199, 19-211, 31, 36, 63, 101, 122, 125). However, under the provision of the records access rule, a chemical inventory is treated as an exposure record only in the absence of material safety data sheets. Under § 1910.20, neither MSDSs nor chemical inventories have to be kept for a specified period, provided *some* record of identity and where and when used is kept for 30 years. Thus, the employer has the option of keeping either the MSDS, or the inventory, or some other record of chemical identity for the 30 year period specified in the records access rule. For purposes of this standards, however, outdated lists and MSDSs need not be maintained. In any event, the list will be a useful tool and remains a requirement in the final standard.

4. *Labels and other forms of warning.* In the proposed standard, the employer would have been required to label every container in the workplace with the "identity" of the hazardous chemicals contained therein and "hazard warnings." The term "container" did not include pipes or piping systems. Containers leaving the workplace would also have to have been labeled under the proposed scheme with the identity and hazard warnings, as well as the name, address and telephone number of the manufacturer.

Two exemptions were provided in the proposal to the in-plant container labeling requirement. Where stationary containers in a work are had similar contents and hazards, the employer could choose to post signs or placards with the appropriate information, rather than individually labeling each container. Furthermore, the proposal 53301 exempted a container holding ten gallons or less if an employee using it did so immediately, and transferred the material from a labeled container to the

container being used, and thus was aware of the identity of the contents.

Under the proposal, the label served as an immediate warning of hazards in the workplace, a visual reminder of information presented to employees in training programs and on material safety data sheets, the other two required components of a comprehensive hazard communication program. This approach to the use of labels was discussed in a conference report issued by the Conservation Foundation (Ex. 18-2):

> The purpose of labels on hazardous chemicals, or on products containing them, is to warn about potential danger of significant risk. Labels for hazardous materials should be printed on or attached to a container so that they will remain legible and affixed to the container at least as long as the product remains within. They must convey critically important information in a limited space, and frequently in a limited amount of time and degree of concentration from the reader.

Under the proposed provisions, the labels were not intended to be either the sole, or the most complete source of information regarding the nature or identity of hazardous chemicals in the workplace. The identity on the label could be any term the employer wished to use, as long as it also appeared on the material safety data sheet for the substance along with the precise chemical name(s). Under this plan, the employer could thus use common terms, familiar to employees, while still providing them with more extensive information, including specific chemical identities, on the material safety data sheet.

Furthermore, the provisions were written in broad, performance-oriented language so that many of the existing labeling systems could continue to be used. This did not mean that labels of any type could continue to be

used in all cases—the performance-orientation meant that those labels which met the minimal information requirements established, regardless of the format it was presented in, could continue to be used. Thus, for example, labels prepared in accordance with the National Paint and Coating Association's Hazardous Materials Information System would generally be in compliance, as would those labels prepared in accordance with the guidelines in the American National Standards Institute voluntary consensus standard on labeling. Use of these systems would not mean that employers would not be held accountable for providing the information required. It simply meant that they would not have to alter the format of their information presentation.

Some participants in the rulemaking believe that a standardized labeling format should be promulgated by OSHA (e.g., Exs. 19 (6, 89, 148, 150), 31, 46, 66, 118, 123, 125, 134). For example, the National Institute for Occupational Safety and Health stated (Ex. 19-89:);

> NIOSH reaffirms its position on labeling as contained in the NIOSA Criteria Document "An Identification System for Occupationally Hazardous Materials." NIOSA is concerned with the potential lack of uniformity in design of and information contained on labels generated by various industries. Information transfer is inhibited if a worker is presented with multiple formats containing a wide variety of information on chemical hazards. It would be of considerable benefit to all who must work under this Rule if OSHA would specify a fixed format for all container labels.

However, other participants supported the performance-oriented approach since some labeling programs may be more effective in one industrial setting than another. The Western Electric Company expressed this view as follows (Ex. 19-90):

> We support the performance oriented requirements for labeling as outlined in the March 19 proposal. It is our opinion that the information on a label should be kept as simple as possible, using a readily identifiable system such as the NFPA diamond with numerical ratings in association with an aggressive training program. Such a system provides hazard identification to which an employee can easily relate. While this system has proven to be highly effective in our workplace, it should not be implied that it is satisfactory for all. Employers need the flexibility of implementing labeling programs best suited for their particular situations.

Since there is no information in the record to indicate that one type of labeling system is inherently more effective than another, and since the labeling provisions of the standard are supplemented by a training program where the employer will have to explain to employees the labeling aspects of the hazard communication program in their workplace, OSHA does not find that the record warrants disruption of current labeling practices to implement a standardized system. A number of participants in the rulemaking generally endorsed the proposed requirements as being appropriate (e.g. Exs. 19 (51, 71, 83, 90, 91, 109, 205, 220), 102, 106, and 114).

A number of suggestions were received concerning the information to be presented on the label. These specific recommendations ranged from requiring the number of the chemical as listed in the NIOSH Registry of Toxic Effects of Chemical Substances (RTECS) (Ex. 19-148), to indicating the location of the material safety data sheet (Ex. 19-204). Several other participants, however, commented that including too much information on a label can render it an ineffective means of transmitting hazard data. The American Petroleum Institute's panel during the public hearings included a behavioral scien-

tist, Dr. Daniel Felker, who addressed this issue of information overload. (Tr. 1759-60) :

> There is a considerable body of literature from the psychological, psychoanalytical research that says that comprehension is affected by the amount of information that is contained in any message.
>
> If you are interested in carrots, knowing about apples does not help you retain information about carrots. I mean, that's simplistic, but there is a thing of what we call cognitive overload.
>
> A human being, a human learner can attend so much stimuli at any given time. That varies by human being. By overloading the amount of stimuli or the number of messages will detract from the comprehension of any particular piece.
>
> So, if you're worried about making sure you don't pick up some substance, and that's your message, you are detracting from that by giving him, oh, many, many other kinds of information that are only peripheral to that.

The Conservation Foundation also addressed the problem of presenting too much information on a label (Ex. 18-2) :

> Labels cannot practically attempt to warn in detail against all conceivable problems, even though case liability law may seem to suggest otherwise. The reasonably foreseeable major or frequent risks of use or abuse should be emphasized, with priority given to the more severe risks. The need for limiting the scope of label messages is most evident when labels must be small in size (e.g., on small containers). Even on larger containers, however, too many messages can detract from the more significant hazards or altogether discourage attention from the warning statement.

Given OSHA's stated purpose for the labels within the comprehensive hazard communication program, i.e. serving as an immediate warning and as a reminder of the more detailed information provided in other forums, the information required under the proposal is sufficient, and remains the same under the final standard. The identity on the label is keyed to the material safety data sheet for the chemical, which will contain more extensive information. The training program will explain to employees both the labeling system and the information on a material safety data sheet, so the employee will be provided with extensive information on each chemical through the integrated elements of the comprehensive hazard communication program.

In 53302 some cases, the suggestions for information to be included on the label related to the question of whether the label or the material safety data sheet should be the focus for detailed information in a hazard communication program. Dr. Daniel Teitelbaum, a consultant with experience in preparing hazard communication vehicles for various companies, addressed this issue of using the label as a detailed source of information. (Tr. 166):

> I think that in general if one looks at the pesticide labels, one finds that there is a vast amount of information which absolutely nobody understands and I'm not sure that putting the content on a pesticide label has been very helpful and I would have some reservations as to whether you needed to list the ingredients on the label.
>
> I would think that listing the ingredients on the Material Safety Data Sheet Keyed to the label is probably equally efficient and perhaps as effective.

Other participants also addressed the lack of a demonstrated need for identities to appear on the label, rather than on the material safety data sheet (American Iron and Steel Institute, Tr. 2041-42):

> One of the problems we have with putting chemical names on labels is that in most cases the chemical name, to me, a layman, has no bearing upon what the dangers, the inherent hazards of the chemical are. I really couldn't tell by looking at that chemical name what I'm working with. Whether it is as non-toxic as water, or whether it is as toxic as some very, very rare chemicals * * *
>
> I think that has been proven time and time again by these studies. The chemical name, if it is a very common name, such as benzene, is approached and reviewed by the persons's eye. He goes back to that name.
>
> If it is, on the other hand, a very complicated long chemical name, he never resorts to it.

Several participants similarly indicated that no identification should be required on the label, but that it should simply contain hazard warnings (Ex. 19-57, 19-61, and 19-94). The rationale for this suggestion was that many labels in use in plants currently do not include identities and that what workers really need to protect themselves are warnings, not identities. These views contrast sharply with those of some participants, especially employee representatives, who criticized the lack of a requirement to list the chemical identities of all ingredients on the container label. Despite the fact that this information was required to be provided on the MSDS, unless the specified chemical identity was a trade secret, these participants argued that it needed to be provided on the label as well (e.g. Exs. 36, 58, 60, 62, 63, 64, 74, 77, 80, 103, 107).

The primary rationale for the argument was that material safety data sheets are often not available to the employer currently, and when they are available, workers do not always have access to them. As stated by the

AFL-CIO, et. al. in their post-hearing submission (Ex. 180A):

> Even if material safety data sheets are provided by the manufacturer, the standard's theoretical right of worker access to safety data sheets and specific chemical identity contained therein, is in practice non-existent. Unfortunately, fear of employer retaliation will prevent many workers from requesting safety data sheets (Tr. 3062, 3109, 3323, 3836). This problem is further compounded by the proposed standard's requirement that workers identify themselves to the employer to gain access through their union representatives. Thus, in reality, the information printed on the container label is the only information available to many workers. Therefore, identification of hazardous ingredients by chemical name must be required on the label.

It should be noted that Section 11(c) of the Act specifically prohibits employers from discriminating against or discharging employees for exercising their rights.

OSHA agrees that employees should be provided with thorough information on each hazardous chemical in their work area, including specific chemical names, but, as will be described in more detail in the following section of this preamble, OSHA has chosen the material safety data sheet as the most appropriate means of transmitting these specific details on the identities and hazards of the hazardous chemicals in the workplace. Labels are physically attached to containers, and in order for employees to obtain a copy, they would have to remove it from the container, or copy down the information. The material safety data sheets, on the other hand, will be located in an accessible place in the work area, where the employee can read them when necessary, or copy them for their own use. Furthermore, employee representatives will also have automatic access to this information under the final standard.

OSHA does not believe that it is fair to predict employer compliance with the material safety data sheet requirements based on what may have been the practice in the absence of regulation. The fact that sheets are often not available today is merely a reiteration of the need for a standard to require development and distribution of material safety data sheets for all hazardous chemicals, as OSHA is doing in this final standard for hazard communication.

Since this standard will require employers to ensure that material safety data sheets are readily accessible to employees, and the Access to Employee Exposure and Medical Records regulation (29 CFR Part 1910.20), guarantees them the right to examine and copy them as well, it is unreasonable to assume that in practice access to chemical identity information will be non-existent. In fact, some employers already provide access to material safety data sheets voluntarily (e.g. Tr. 745-46; 2501; 3001). Further under this final standard, employers will have to apprise employees of the existence and contents of MSDSs. In addition, the final standard allows automatic access by collective bargaining agents, so in any event, union representatives will be able to obtain material safety data sheets without any individual granting them written designation. Therefore, OSHA does not find the argument concerning chemical identity on labels to be supported by the evidence in the record, and has not changed the provision which allows common name designations to be used. Employees are granted access to the information on the material safety data sheet, and no participants in the proceeding have supplied convincing evidence that providing the information in some source other than on the label is less effective in communicating hazards.

The identity of a substance alone does not cause workers to modify their behavior, and thus achieve the goal of hazard communication. Additional data in the form

of hazard warnings are what must be transmitted and received before an employee can act on the information. For example, Mr. Michael Wright of the United Steelworkers of America testified regarding a worker who died from being overexposed to methyl chloroform (Tr. 782-3), the container of which was labeled only with the trade name of the chemical, with no additional hazard information. When questioned regarding whether the worker would have been adequately protected if the label had also included hazard warnings, Mr. Wright stated (Tr. 872-3):

> I think in that case, had that warning been on the label and had there been an adequate training program, that he would have been protected.
>
> Our need for chemical identiy is to check the adequacy of the warning and to insure that we have the most up-to-date information.

In their post-hearing submission, the American Iron and Steel Institute further 53303 addressed the arguments in the public record dealing with the need to put chemical identities on container labels as follows (Ex. 178):

> * * * [T]he proposed performance-type Hazard Communication Standard does not preclude employees from obtaining chemical composition information if so desired; it simply does not require each and every chemical contained in the product to be included on the warning label or placard. Such data would still be available to workers through Material Safety Data Sheets (MSDSs) for non-proprietary products. We are aware that critics of the performance approach have pointed out that MSDSs are sometimes incorrect and/or incomplete. However, we do not accept this as a valid argument that complete chemical identification should be required, since labels have the same potential for possessing such flaws as do MSDSs. In other words, there is noth-

> ing about labels or placards which makes them an inherently better source of chemical composition data. To the contrary, even some proponents of a specification standard feel that the MSDS may be a better source of such information.

In particular, the AISI was referring to a union industrial hygienist, Mr. Michael Wright of the United Steelworkers, who testified (Tr. 907-8):

> As long as several other provisions are complied with, for example, as long as the union could have access to the MSDS without having to go through the process of getting a signed form from the worker giving us that access. If we've got someplace in the workplace we can go to get that information rapidly and quickly, I think it's less important that it be on the label.
>
> There are cases of its being on the label, I think, could create some problems if that was the only place. For example, plently of plants I've been in, the label is very quickly obscured after the vat's open and people dip out of it a few times, whatever is in it, has come down over the label and you can't read the label anymore.
>
> That, I think happens fairly frequently. Things which are broken up into smaller and smaller containers and used in other places, the label could become very large for small containers and in those cases as MSDS is sufficient for us as long as there's maybe a code name on the container so we know which MSDS is appropriate.
>
> Now, again, two things are required for that. One is the union rep has to be able to go and get the MSDS without needing a signed consent. Second, the MSDS has to be readily available right in the workplace on every shift, can't be in a central office some-

> where, in a central computer bank. It's got to be right there where you can go and get it.

– Under the provisions of the final standard, Mr. Wright's conditions for accepting the MSDS as the primary source of chemical composition data have been satisfied. Unions are to have direct access without requiring written consent, and the MSDSs are to be readily accessible to employees. In addition, an identifier is required on the container to provide access to the appropriate data sheet. OSHA does not consider a label without an identity to be sufficient for purposes of this standard. The identity allows the employee to link the material in a container in the workplace to the appropriate material safety data sheet which contains additional information on the substance involved. Without that link, the material safety data sheet will not be effective in transmitting the information.

In sum, the final standard requires an integrated program which will provide employees with both identity information and hazard warnings, as well as an explanation of what protective action is warranted in the employee's exposure situation. All of these elements combined will provide employees with the complete information they need to protect themselves. Therefore, the provisions of the final standard answer the concerns expressed and are an acceptable alternative to chemical names on a label.

Several other issues concerning the proposed labeling requirements were also addressed. For instance, a number of interested parties also objected to inclusion of a telephone number on labels on containers leaving the workplace (e.g. Exs. 19-8, 19-54, 19-76, 19-91, 19-115, 19-67, 19-207). According to these commenters, labels on outgoing containers do not usually have telephone numbers on them now, such numbers may change frequently, and in any case, since the name and address

appear on the label, the telephone number may be obtained from telephone information. Furthermore, since the telephone number is required on the material safety data sheet, this is considered to be sufficient. Although telephone numbers on labels could be useful information where available, the specific requirement to include them has been deleted from the final standard to accommodate these concerns.

The use of the term "identity" in the proposal was confusing to some of the commenters, who interpreted the requirements as requiring a listing of ingredients on the container because the term chemical was also indicated in the plural form, chemical(s). (See Exs. 19-14, 19-47, 19-79, 19-94, 19-115, 19-141, 19-144, 19-169 and 19-170). The term was expressed in the optional plural form because the employer may choose to list more than one name on the container. For example, if the container has a mixture of carbon tetrachloride and ethylene dibromide in it, the employer may find it appropriate to list those two names on the label. However, if this mixture is known by the common name "80/20," it may be as appropriate to use that common designation in the workplace. Employers are referred to the definition of "identity" for further explanation. Essentially, they may use whatever term they choose, including code numbers, common names, etc., as long as that designation permits access to the associated MSDS with the proper chemical designations of the ingredients.

Several commenters also suggested that the name and address on the label should be for a "responsible party" rather than the manufacturer in every case (Exs. 19-8, 19-54, 19-57, 19-84, 19-91, 19-158, and 19-162). In some situations, a distributor or repackager may be a more appropriate contact for additional information. OSHA has accordingly modified the final standard to permit the designation of a "responsible party" in lieu of the manufacturer, where appropriate.

A number of comments were also received on the ten gallon, immediate use exemption. The majority of those commenting felt that the exemption should be extended to any portable containers intended for the immediate use of the employee (Exs. 19-62, 19-88, 19-94, 19-111, 19-115, 191-121, 19-131, 19-145, 19-146, 19-162, 19-185, 19-206, 61, L-16). For example, American Hoechst Corporation addressed the issue as follows (Ex. 19-88):

> The ten-gallon exception from the labeling requirement in subpart (d)(5) is also too restrictive. In continuous, as well as batch processes, fifty-five gallon drums or large mobile containers are used to transfer material within a plant. Employees are thoroughly trained in the handling of such materials and there is no need to label such containers. Any "need" for such labeling should be left to the discretion of the manufacturer.

In the final standard, OSHA has extended the ten gallon, immediate use exemption to any portable container which is intended for the immediate use of the employee, since the size of the container should not be the determining factor as to whether a label is necessary. The key factor is whether its contents are known to the employees exposed to them. It should be emphasized, however, that this labeling exemption is narrowly circumscribed. The final standard includes a definition for immediate use which indicates that it means the hazardous chemical will be under the control of and used only by the person who performed the transfer and only within the work shift in which it is obtained.

A number of participants also indicated that containers already 53304 labeled in accordance with other Federal regulations should be exempted specifically from this standard. OSHA has addressed the overlap with other Federal regulations in the scope section of the standard and provides there for a labeling exemption for certain

substances that are already subject to the labeling requirements of other Federal agencies. The only specific exemption which appears in the final standard under the labeling section states that labels applied to comply with the final OSHA standard shall not conflict with any labels applied in compliance with the regulations of the Department of Transportation. The rationales for these provisions are addressed in the discussion of the record under the scope and application portion of the preamble.

The most frequently adressed issue regarding labeling concerned the extent of in-plant labeling of process equipment. Numerous comments were received which indicated that labeling of reactor vessels and other stationary process equipment was neither necessary nor feasible. Some cited the situation involving batch processes where the chemicals in the process change frequently, and thus the employer could not reasonably be expected to update in-plant labeling with similar frequency. (See e.g., Exs. 19 (43, 44, 46, 48, 52, 55, 58, 59, 60, 61, 62, 64, 67, 71, 73, 76, 111, 126, 158, 176, 196, 214): 61; 109; 136; 149; 164; 182).

In the preamble to the proposed standard, OSHA addressed this situation and solicited comments on the use of batch process sheets or similar documents as viable alternatives to labeling of equipment with in the workplace. This suggestion garnered considerably support from rulemaking participants. For example, Merck & Co., Inc. commented as follows (Ex. 19-52):

> As noted in the background summary portion of the proposal, batch process operations would make labeling, tagging, or marking of process vessels impractical due to the frequent change in vessels contents. The posting of process sheets *in the process area*, which indicates the chemicals in the vessels during the process cycle and appropriate hazard warnings, appears to be a more practical allowance. Many of our chemical operations are batch

processed. We have found this means of instruction and communication is very effective for our employees. A representative section from a process sheet shows a warning brief used before the operator is to handle the material:

Soda caustic 25% (1-83462)

Warning! Causes chemical burns. Do not get in eyes, or skin, or on clothing. Wear goggles and nitrometer mask, rubber gloves, and rubber apron when handling exposed liquid. In case of contact, flush affected area thoroughly with copious quantities of water for 15 minutes, then seek medical attention.

Wear Goggles and Nitrometer Mask, Rubber Gloves and Rubber Apron. Adjust pH of batch to 7.5 to 7.7 with soda caustic 25%.

Amount of soda caustic used ————. Final pH ———.

Date ———— Time ————

Other participants in the rulemaking also submitted examples of their batch process sheets or similar forms (see, for example, Exs. 136 and 137).

Process instructions such as those quoted above from Merck & Co., Inc., provide the information necessary to ensure that the employee is informed. OSHA has determined in the final standard that such alternatives to in-plant container labeling should be permitted for all stationary containers, as long as they present the same information required to be on container labels, and are readily accessible to employees in the work area.

An additional issue raised concerning the labeling of in-plant processes involved labeling requirements for pipes and piping systems. The proposed standard specifically exempted these containers from labeling due to concerns

regarding the feasibility and effectiveness of such requirements. Many of the facilities covered by this standard contain literally miles of pipes, and employees frequently do not even enter these areas except to perform maintenance or repair activities. Furthermore, in batch processes, the contents of the pipes change frequently (as was described in the discussion above dealing with other process equipment), and therefore accurate labeling of these pipes would involve frequent changing of labels as the batches change.

Industry representatives indicated that practicality determines whether labels are used on pipes and other stationary process equipment, or whether other systems will be used to communicate hazards (e.g., Ex. 19-91; Tr. 1004; 1099-1101; 1808; 2059-2060). For example, a representative of the Chemical Manufacturers Association testified (Tr. 1004):

> * * * A movable container certainly should be identified as it moves about the workplace, but a stationary piece of equipment need not always have to be so labeled.
>
> In many instances, there will be some form of identification on equipment relative to its contents, but in many other cases, there may be only a sign in the area, a symbol, a color code, or simply an operating procedure that outlines equipment contents and process flow covering chemical identifiers, hazards, protective measures, and the like.
>
> Some equipment contents vary from day-to-day, or hour-to-hour, and a reliance upon a sign or a label on something anywhere from one to a hundred feet up in the air would be risky at best, and impractical from an update changeover point of view. Verbal communications are superior in this situation coupled with operating procedures.

A representative of the American Iron and Steel Institute also expressed similar concerns (Tr. 2059-60):

> It becomes a practical impossibility in some cases to label something that's carrying molten metal. The label becomes ineffective in and of itself because to get close enough to the label to read it, you would be dead. You can't get that close * * * But to require us to label those things is almost nonsensical because it is so impractical. And if you require us to do it, we're going to have to go up to that label after each use and put back a new label, because the one will be destroyed.

The Chemical Manufacturers Association further elaborated on the determination of whether or not pipes should be labeled (Tr. 1101):

> It depends on the complexity of the operation, the number of pipes. It depends on whether there is a change of process ingredients, if you will, that flow through the pipe. It depends on whether they are designated systems. If we have say acrylonitrile running through a particular line, particular vessel, morning, noon, and night 365 days a year, I daresay you will see that prominently displayed.

A representative of the Teamsters Union also commented on the differences between fixed processes and those where the chemicals change frequently with respect to the appropriateness of labeling pipes (Tr. 2229-30):

> I think the timing of the change in the chemical composition of the vessel itself would probably be relevant to how feasible would be to change the labeling to line up with the continuation of the process.
>
> If the chemical composition changed once an hour in a five-hour process in coming out with the final chemical, then, it doesn't seem unreasonable to me that since this is a fixed plant operation—it is not

moving around—that you could come up with a system of changing the labeling as you went through the process. I am sure that there are other steps that have to take place to actually do the batch into the chemical that it is going to result in.

Changing the label doesn't seem to be that oneous burden to reflect what is going on in the process. If the process is going to have five chemicals come through in 10 or 15 seconds in a process of coming to that end chemical, that presents a different issue and the utility of accurate labeling and changing labeling is going to be somewhat suspect.

Economics Laboratory, Inc., commented on the need to have flexible requirements to accommodate the needs of the various workplaces covered (Ex. 19-162):

53305 As a general observation on the labeling requirements, we wish to state explicitly here the obvious fact that any employer has an abiding interest in the "sufficient" labeling of all containers, large and small, in the workplace. Worker protection and product integrity demand it. This standard would require hazard statements as well. This is most reasonable and practicable for dedicated containers and systems. Keeping such requirements simple and flexible, as we understand to be the intention of OSHA, will go far in promoting continued observation of any such standard.

It is clear that despite practical concerns with labeling, pipes may leak, rupture, or otherwise be involved in creating exposure situations, and thus employees need to be apprised of the hazards and any steps to take to protect themselves. In the proposed standard, employers would have been required to include in their hazard communication program the methods they would use to inform employees of the hazards of non-routine tasks, such as re-

pair and miantenance of unlabeled pipes. For some employees, however, repair and maintenance of unlabeled pipes may be a routine task.

A number of participants in the rulemaking believe that labeling of pipes and piping systems should be included in the final standard (e.g., Exs. 19-112, 36, 60, 63, 64, 74, 108 and 131). For example, in their testimony in the public hearings, the AFL-CIO stated (Tr. 357):

> * * * pipes and piping systems should be included in the definition of containers to assure the protection for many chemical workers at high risk from exposure to pipe ruptures, faulty valves, and maintenance activities.

In a joint-hearing submission prepared by four of the unions participating in the rulemaking, it was further stated (Ex. 180A):

> Worker and union testimony indicates that many of the most serious exposures to chemical workers result from the rupture of unmarked pipes, faulty or blown valves and from maintenance operations on unmarked piping systems (Exs. 74, 160-2, Tr. 2563, 2579, 3603) * * *

It is difficult to comprehend, however, how labels could be read by employees when a pipe has ruptured, or a valve has blown. Under those conditions, it is likely that the label itself would be destroyed or obscured, and would have limited usefulness to the employee.

Although OSHA agrees that employees need to be informed of the potential hazards in dealing with pipes and piping systems, it is not necessary to require labels on all pipes and piping systems to accomplish it. Industry representatives indicated that a number of methods are used to ensure employees are apprised of the hazards in their work areas. For example, the Chemical Manufacturers Association representative cited above elaborated (Tr. 1005-6):

> Personnel in each operation area, supervisor or chemical operator are familiar with the process equipment, piping and chemicals present. Most workplaces where hazardous substances are handled are off-limits to unauthorized personnel. If maintenance is required a line or a vessel must be opened. No work is done until the responsible operation person assures the maintenance personnel that the equipment is completely decontaminated and safe for access. Personal protective equipment is available and highlighted as necessary.

And the American Iron and Steel Institute representative indicated (Tr. 2059-60):

> * * * We like to think of the use of other elements such as safe job procedures, placarding an area. The use of warning lights and sirens. The use of safety contacts to communicate to those workers the danger and the hazard with which they are faced.

The Dow Chemical Company indicated that all of their process equipment is labeled with a unique equipment number which may be cross-referenced to the appropriate material safety data sheet (Ex. 19-160). Vessels with a capacity greater than 5,000 gallons are also labeled with a National Fire Protection Association (NFPA) label. Dow further stated (Ex. 19-160):

> Dow plant operations personnel are extensively trained to recognize the NFPA markings and to know the contents of all containers at various processing steps. We believe such training is more vital to safe operations than elaborate process equipment labels.

Economics Laboratory, Inc. commented on the fact that labels are sometimes not the most useful alternative for communicating hazards, since the equipment on which they are placed is located some distance from where employees are actually working (Ex. 19-162):

> * * * There will be a desk or work station nearby where the mix sheet is kept as the formulation is assembled. We now use that sheet for hazard and equipment information, precisely because it is right where the workers need it when they need it. Even where mixers are used for several different products in a day, the mix sheet necessarily provides the correct identification.

Other testimony similarly indicates that in some cases, labeling will be done, but the requirement for communicating hazards in pipes should be adaptable to the many diverse plant situations (Mr. T. Evans, Monsanto, Tr. 1099-1100):

> * * * [W]e have many plants that are, I won't say totally, but they are predominantly identified. We have some that have piping structures, such as the example I held up today, that would be an absolute nightmare and we would probably cause more trouble having people climb ladders and hang signs and identification on something like that than we feel is necessary.

In the final standard, OSHA is requiring employers to include in their written hazard communication programs the means they will use to apprise employees of the hazards of the chemicals in pipes and piping systems in the workplace, and the protective measures employees can use in the event of exposure situations. Employers will thus have the flexibility to use whatever means of communicating the hazards of the chemicals in the pipes and piping systems which they find to be most effective. Since MSDSs will be available in the work area in the event of an emergency, and employees will be trained as to the hazards and actions they are to take, this should provide the necessary protection.

Some of the participants in the rulemaking stated that OSHA does not have the authority to require manufac-

turers to label containers leaving the workplace (Exs. 19 (47, 48, 54, 68, 72, 76, 91, 111, 116, 120, 147, 158); 109; 177). As was discussed in the preamble to the proposed standard, OSHA concludes that it does have such authority, and a discussion of the legal rationale for this finding can be found in the Legal Authority section of this preamble.

5. *Material safety data sheets.* In the proposed standard, material safety data sheets served as the primary vehicle for transmitting detailed hazard information to both downstream employers and employees. This focal role has been maintained in the provisions of the final standard.

A material safety data sheet (MSDS) is essentially a technical bulletin, generally two to four pages in length, which contains information about a hazardous chemical, such as chemical composition, chemical and physical characteristics, health and safety hazards, and precautions for safe handling and use. (e.g. Ex. 19-124). Although their use and availability is fairly widespread in the chemical industry, this is currently primarily a voluntary action since MSDSs are only required under OSHA standards in the maritime industry (29 CFR Parts 1915, 1916 and 1917). Some state right-to-know laws also require the availability of MSDSs (Ex. 16), but most of the sheets have been generated as a good business practice, rather than as a response to legal requirements.

53306 Properly completed MSDSs serve as excellent, concise sources of information regarding the hazard of a chemical. Many participants in the rulemaking endorsed using them as a primary component of the hazard communication program, and cited their own successful use of them as support. For example, Armco, Inc. stated in their prehearing comments (Ex. 19-146):

> The OSHA proposal utilizes MSDS's as the primary means for transmitting comprehensive hazard

> information, instead of labels. Our experience has shown that MSDS's are better than labels for training employees in the safe use of chemicals. We agree with OSHA that employees can more conveniently examine and copy MSDS information for their own use.

Similarly, the National Association of Printing Ink Manufacturers stated: "Since the label is limited in the amount and detail of hazard information which it can contain, the MSDS serves as the source document and reinforcement of the information presented on the label" (Ex. 19-194). The Rohm and Haas Company elaborated on the MSDS's role as a source document by noting that: "Labels, placards, operating instructions, transportation orders, and other hazard communication documents should be based on and consistent with the MSDS" (Ex. 19-115). OSHA agrees, and anticipates that the MSDS will be the first part of a comprehensive program to be implemented, since both labels and training programs will be derived from the information generated for the MSDS.

The Shell Oil Company has designed its own MSDS form, and has utilized it as a primary part of their ongoing hazard communication program. In addition, it has prepared a "User's Guide" which explains the form and its contents in detail, including a glossary of terms (Ex. 19-124). As a result of experience with its MSDS program, Shell stated (Ex. 19-124):

> We strongly support the position taken by OSHA in this proposed rule that the employee's most thorough source of information about hazardous chemicals in the work area must be the MSDS. For several years we have been preparing MSDS's on our products and on process streams in our manufacturing facilities. We have well-developed procedures in place to prepare MSDS's which we believe represent responsible practice and fully meet the basic objectives of the proposed rule.

Some participants noted during the rulemaking that MSDSs have historically been difficult to obtain, and may be incomplete or inaccurate when finally received (Exs. 36, 46, 47; Tr. 98, 1395). Workers cited cases where they attempted to obtain an MSDS for hazardous chemicals in their workplace, but were either unable to do so or had to wait a significant period of time for the necessary information. For example, Jim Bryant of the United Steelworkers of America testified as follows (Tr. 3833-34):

> Just recently, we became aware of the fact that the company does have a record of safety data information and we have a right to ask for it. I think three months ago we asked for the safety data sheet information and they said they would check with it and get back with us.
>
> In our last month's safety and health meeting with the company, I was shown two copies of safety data sheets in which it had their brand name and their coded number and their formula, which they told me was their formula. I asked them at that time if it would be possible for us to obtain copies of this and they told me that they did not want to release that information due to their formula.
>
> I asked if there was any kind of a trade secret or what the problem was and they said they just didn't want their formula to be widespread. At that time, I told them, well, if they wanted to, they could block out the formula, the percentages wasn't that important, but we would like to know what was involved, what different chemicals were involved in the formula. And, the answer given to me was that they would think about it and they would try to work with us on it.

The Department of Defense, as well as downstream employees, also cited difficulties in obtaining MSDSs for products they purchased (Tr. 1377-78; 3680-81).

The adequacy of the information of the sheets when received was also discussed. Angela Oh, of Los Angeles Committee on Occupational Safety and Health, reported (Tr. 3127):

> * * * we have found in our experience of requesting MSDS's that those data sheets are often inadequate in terms of information about a substance. And, we're talking about very basic physical properties of chemicals that are just left blank. People reading the sheets presume that there's no problem if nothing is written in.

Other participants submitted examples of inadequate MSDSs to the record to illustrate this point (e.g., Exs. 36, 74, and 101).

OSHA recognized the inconsistent quality and availability of MSDSs when the proposal was published (47 FR 12104). The fact that some employers do not voluntarily provide MSDSs, or that when provided the sheets may not contain thorough information, does not detract from the utility of an MSDS in a hazard communication program when it contains the necessary information and is readily available to employees and downstream employers. The provisions of this final standard are thus necessary to establish a requirement for MSDSs, and to ensure that all of industry matches the information transmittal practices set voluntarily by responsible employers. No participants in the rulemaking maintained that properly completed MSDSs are not useful sources of information.

The proposed standard placed the primary responsibility for preparing an MSDS on the manufacturer of the hazardous chemical. The rationale for this approach is that the manufacturer most likely to have the best access to information about the product, and thus should be responsible for disseminating this information to users of the material. The downstream employers are free to under-

take an independent evaluation of the chemical in question, but if they do so, would then assume responsibility for the adequacy and accuracy of the information they use.

This approach of placing the primary responsibility on the chemical manufacturer was supported by many participants. The American Iron and Steel Institute expressed the consensus of many manufacturers who use hazardous chemicals in their processes as follows (Ex. 19-207):

> The current proposal's provision that chemical manufacturers be responsible for providing MSDS's to purchasers of hazardous chemicals is a greatly needed and indispensable addition. It makes much more sense in terms of total cost, time, and manpower to have the manufacturer prepare and supply MSDS's on its product for its customers rather than to have each purchaser develop its own. Manufacturers having the background chemical data at hand, are in a much better position than downstream employers to provide knowledge about the hazards and other pertinent information on their products. Conversely, users are in a better position for relaying and communicating this information to their affected employees through training and education.

The contention that the chemical manufacturers have the best access to information, and should bear the primary responsibility for preparing MSDSs, was not substantively challenged in the record. In fact, the Chemical Manufacturers Association stated: "* * * we recognize the desirability of having manufacturers provide MSDS's to their customers; indeed most chemical manufacturers currently do so" (Ex. 19-91). Similarly, the American Petroleum Institute noted that: "It is the responsibility of the chemical *manufacturer* to prepare a material safety data sheet for his product, and to make it available upon

request to employer/user and as an employer to inform his employees of the hazards" (Ex. 19-111).

53307 Another chemical producer who supported the assignment of responsibility to the manufacturer was Vulcan Chemicals. "As a chemical producer, we have developed and distributed safety data sheets for our products and we concur that it is desirable for us to obtain MSDS's for the hazardous chemicals we purchase. However, we do not agree that each employer should *develop* an MSDS for hazardous chemicals purchased for use. The development of an MSDS should be the responsibility of the manufacturers of hazardous chemicals or products which contain hazardous chemicals" (Ex. 19-165).

While chemical manufacturers did not generally take issue with assuming responsibility for preparing the sheets, they did raise two objections to the requirements as proposed. First of all, they were concerned that the chemical manufacturer would be held responsible for providing information on the MSDS that only the downstream employer could know based on the specific use of the product, and secondly, many believed the MSDS should only be provided when requested, rather than being furnished automatically as proposed.

The first objection, concerning the provision of specific information in certain MSDS categories, resulted from a misinterpretation of, or a lack of clarity in, the proposed requirements. Employers such as Phillips Petroleum company believed that the proposal required them to know every downstream use of their products, and provide specific information on the MSDS related to that use. Phillips stated (Ex. 19-177a):

> Material safety data sheets are the most effective means of communicating technical and related data to employers who are chemical users. However, the data must be limited to general technical information concerning the chemicals or mixture and not attempt

> to be an assessment of specific hazards under every possible condition in a downstream workplace. Individual hazard communication programs must be tailored by each user employer.

OSHA agrees that the chemical manufacturer can only provide general information regarding certain items required to be on the MSDS. Nevertheless, this does not mean that the chemical manufacturer should not consider these categories, and provide as much information as the manufacturer has. Similarly, if the downstream employer has additional specific information that is applicable to a given category, the standard does not preclude addition of these data to the sheet to make it specific to that workplace. In any event, workplace-specific information must be incorporated into the training program required by the final standard.

A number of participants suggested that the categories in question, such as engineering controls recommended and procedures for decontaminating equipment, be deleted from the MSDS requirements (e.g., Exs. 19 (46, 54, 59, 76, 91, 162, 194, A-19). OSHA does not agree, since where available this information would be a valuable addition to the hazard communication program. Only control measures which are generally known to the chemical manufacturer or importer are required to be listed. Employers are not required to engage in extensive research to develop recommendations where information is not generally known. In the final standard we have attempted to clarify the extent of the chemical manufacturers' duty, and have indicated the responsibility of the downstream employer to contribute information when extant and appropriate.

It should also be noted that just as a chemical manufacturer cannot make specific control measure recommendations for unknown downstream uses, it also cannot accurately predict the hazard presented by the chemical downstream. Therefore, the chemical manufacturer must provide thorough hazard information, which would be ap-

plicable to a full range of reasonably foreseeable exposure situations, rather than limiting the information on the basis of presumed use. The downstream employer will then be assured of having the information reasonably necessary to make informed choices for control measures.

With respect to the second issue, under the proposed standard the chemical manufacturer would have been responsible for ensuring that an MSDS is provided with the first shipment of a hazardous chemical to another employer within the manufacturing SIC Codes. A number of chemical manufacturers objected to this provision, preferring that their customers request an MSDS from them. (See, for example, Exs. 19-43, 19-84, 19-111, and 19-119). Two issues were involved in their rationales. One is that OSHA has no authority for requiring automatic downstream transmittal of material safety data sheets. OSHA concludes that the Agency does have such authority, and the legal rationale for this decision is discussed in the Legal Authority section of this preamble. The second is that manufacturers can maintain better control over the transmittal of the MSDS when it is only sent on request. For example, the Dyes Environmental and Toxicology Organization, Inc. submitted the following representative statement (Ex. 19-205):

> Paragraph (e)(5) directs manufacturers to provide their customers with an appropriate MSDS with their initial shipment of a hazardous chemical and with the first shipment after an MSDS is updated. This requirement is inappropriate, even on the assumption that OSHA has authority over downstream shipments of hazardous chemicals. For example, a manufacturer often cannot determine whether a particular shipment to a customer is the first shipment of the chemical to that customer. An MSDS sent with a shipment could well be directed to the wrong location so that the customer's employee responsible for maintaining MSDSs might not receive it. A better, more cost-effective approach is to require

> the manufacturer to have an appropriate current MSDS for each hazardous chemical it sells. The customer should have to request an initial MSDS, since the customer can best determine when a shipment is the first shipment and to whom the MSDS should be delivered. Therefore the manufacturer can mail updated MSDSs to the proper address.

In the final standard, OSHA has maintained the duty of the chemical manufacturer to provide downstream employers with an MSDS automatically when they purchase a hazardous chemical. The necessity for maintaining automatic provision of the MSDS is amply supported by statements in the record concerning the difficulties encountered by downstream employers in obtaining the MSDSs, and in follow-up time required to ensure their receipt. One difficulty in requiring downstream employers to request information is that they may not be aware that the chemicals that they purchased are hazardous, and that a material safety data sheet is available and thus should be obtained. The American Feed Manufacturers Association testified to this point (Ex. 35):

> Thousands of feed manufacturers are very small firms and most of them use large numbers of ingredients. There is no practical way for the average feed manufacturer to determine if one of the many products which he uses in his business is hazardous if he is not so informed by the supplier of the product.
>
> A downstream manufacturer must be able to assume that no health hazard exists or that the current MSDS is the one in effect * * *

Although small firms have special problems in requesting and obtaining MSDSs, large firms using literally thousands of hazardous chemicals also have significant problems with the "on request" system of obtaining the necessary hazard information. For example, the Motor Vehicle Manufacturers Association presented statistical

information in their testimony 53308 which indicated the problems encountered by large companies in obtaining this information despite the significant marketplace pressure they may exert due to the quantities of chemicals they use (Ex. 102):

> MVMA members have experienced varying response to requests for MSDSs. One member company has compiled data on their experience in obtaining MSDSs. The first slide represents the time from the first request made to a supplier to receipt of a response either with or without an MSDS. It can be seen that this can vary from three days to seven months. A second request was usually made within six months.
>
> If multiple requests are made, the response time can extend up to two years, at which time no further requests are made or an alternate supplier has been found.
>
> The next slide indicates that percentage of suppliers responding to requests for information. These figures show that even after four or more requests, almost ten percent of the suppliers had not responded to requests for an MSDS.
>
> The next slide presents figures on chemicals in one member company's inventory. There are 10 to 20 thousand chemical products in inventory. Based on an analysis of 1800 chemicals, there is an average of 5.4 chemicals/product, with a range of from one to twenty-seven. Multiple requests for information or the employer's attempt to obtain information independently on this number of substances would be unduly burdensome. As a result, MVMA feels that the standard must require the inclusion of an MSDS with the first chemical shipment. Since the MSDS is the key element of this proposed standard, MVMA emphasizes the fact that the downstream employer who pur-

chases chemical products cannot obtain as required in the proposal, an MSDS from the chemical manufacturer if the manufacturer chooses not to provide one. Where the required MSDS is not supplied, the purchasing employer can only make a request to the supplier.

OSHA's draft Regulatory Impact Analysis prepared for the proposed standard also demonstrated the cost-effectiveness of automatic transmittal versus an "on request" approach. Since downstream transmittal with the initial shipment is the most cost-effective means of ensuring that downstream employers receive the necessary information, OSHA has concluded that the evidence presented warrants maintaining the proposed provision requiring chemical manufacturers to send the MSDS at the time of the first shipment.

One clarification has been made to the requirement, however, to respond to that part of the argument which deals with the possibility of sending the MSDS to the wrong person if it is attached to the shipment. The proposed standard's provision concerning downstream transmittal was not intended to imply that the MSDS had to be physically attached to the shipment to comply, as was interpreted by some commenters (e.g., Exs. 19 (8, 48, 54, 55, 117, 124, 147, 162, and 167). The chemical manufacturer may mail the MSDS to the downstream employer, and direct it to any appropriate recipient on the downstream employer's staff. However, it is also possible that attaching it to the shipment may be the preferred means of transmittal in some cases. Some testimony in the record indicates that in the near future, MSDSs may be transmitted to customers via computer link-ups (Tr. 2276; 2341). OSHA is specifying that the information be sent, but not the manner in which it is to be transmitted.

Much of the material in the record addressing material safety data sheets concerns the information to be included in the documents. As discussed above, a number of com-

ments were received suggesting that the requirement for providing information on engineering controls and equipment decontamination procedures, etc., be deleted. (See, for example, Exs. 19-46, 19-59, 19-91, 19-111, and 19-169). Since OSHA maintains that this information, where available to the manufacturer, should be included on the sheets for the use of employees and downstream employers, we have chosen to modify these requirements by indicating that the information to be provided may be stated in general terms rather than to delete them altogether.

A number of commenters similarly suggested that the requirement to include medical conditions which may be aggravated by exposure be deleted. For example, Mobil Oil Corporation stated (Ex. 1-59):

> While there are examples of underlying medical conditions which would warrant special consideration regarding exposure to a toxic substance, e.g., a worker with underlying kidney disease working with lead, the requirement as proposed is not realistic or achievable. Information regarding the effects of toxic exposure on underlying medical conditions is available only for a very small number of substances.
>
> The employer therefore would be placed in the position of listing theoretical possibilities for which minimal or no supportive data are available. Thus, judgments of whether there could be aggravating effects for every possible medical condition for the most part would be speculative even for the well trained occupational health professional. Requiring every employer to make such determinations is totally unwarranted.

OSHA proposed this requirement to elicit just such information as that cited by Mobil involving workers who have kidney conditions and are to be exposed to lead. This type of data needs to be included on a material safety data sheet when it is known. OSHA does not expect, or

require, the MSDS preparer to engage in a speculative activity to predict every type of medical condition which may be aggravated by exposure to a hazardous chemical. However, the utility of the information when available cannot be denied. For example, the Refractories Institute also objected to including such information on the sheets. However, when questioned regarding the usefulness of knowing an employee who was to be exposed to silica had an existing respiratory condition, they testified (Tr. 4072):

> That's one example. We feel that workers exposed to silica should not smoke. I think this has been well established that it aggravates the effects of inhaling silica * * *

Thus, OSHA has maintained the requirement, although it has been clarified in the text of the standard that this information to be included is that which is generally recognized concerning the hazardous chemical in question.

In the proposed standard, the MSDS served as the primary source for information about the chemical identity of the hazardous chemical, and in the case of mixtures, required a listing of those ingredients which were found to be hazardous. The proposal also required CAS Numbers for the chemical or chemicals involved, as well as any applicable common names, including the identity used on the label.

Some commenters thought that the common names or label identity should suffice (Exs. 19-54, 19-71, 19-115, 19-158, and 19A-19). The purpose of providing the chemical identity of the chemical(s) is to provide access to the scientific literature. In most cases, what is considered to be a common name will not serve this purpose (e.g. Tr. 2225). However, as discussed previously under definitions, in some instances a name is commonly used for a chemical which is not a precise chemical identity, but is used in the literature. Thus, using the common name will

permit access to the information in the scientific literature. The definition of "chemical name" has been modified to permit this type of designation as appropriate. Other than this clarification, the duty to provide both chemical and common names is maintained as a necessary feature to ensure that employees and downstream employers can make the link between the commonly used designations and the proper chemical identity used in the scientific literature.

A number of comments were also received concerning the requirement to 53309 provide CAS Numbers for the hazardous chemical(s) (for example, Exs. 19-59, 19-76, 19-85 and 19-91). Some pointed out that CAS Numbers are not available for most mixtures. This is true, but the provision was proposed anticipating that CAS Numbers would be provided for the hazardous components of the mixture in question. In addition, some of these commenters suggested that having both the chemical name and the CAS Number on the MSDS is redundant, and that having one would be sufficient to serve the purpose. OSHA agrees with this point. Where available OSHA believes that the CAS Numbers do provide useful information. However, the requirement to list them has been deleted to accommodate the concerns expressed regarding duplicative information.

One other suggestion made by several participants was that it may be more appropriate to provide the name and address for the preparer of the MSDS, or responsible party, rather than the manufacturer (Exs. 19-84, 19-109, 19-144, 19-158). The rationale for this suggestion was that in some cases, if a user of the MSDS is looking for additional information, the original manufacturer may not be the proper contact point. We have modified the standard to allow a "responsible party" to be named on the sheet, by which we mean that the name and address should be for someone who can provide clarification

of the information on the MSDS, or additional information if necessary, in lieu of the manufacturer.

One other suggestion made by an interested party was that information should be provided concerning available exposure limits in addition to the required OSHA permissible exposure limit (Ex. 19-71). We agree that such information would be useful, particularly the Threshold Limited Value (TLV) recommended by the American Conference of Governmental Industrial Hygienists (ACGIH), or any exposure limits recommended by the manufacturer, and have included such a requirement in the final standard.

Various other suggestions for information to be included were made by interested parties, such as requiring composition percentages and information needed to comply with other Federal laws (Ex. 19-109). Although these suggestions may provide useful information in some situations, OSHA has determined that they are not necessary to protect employee health. Employers are free to include such information if they wish.

The proposed standard required material safety data sheets to be updated within a reasonable period of time following the manufacturer's becoming aware of any new and significant information concerning the health hazard of a hazardous chemical. The proposal did not specify a particular time period for adding this information to the MSDS. OSHA anticipated that to comply with this standard manufacturers would maintain a current awareness of the hazard information related to the chemicals produced in their facilities.

A specific time period was not established because many manufacturers with batch processes change their products frequently, and may not produce a given product for another year. In that case, it would be reasonable not to prepare and send out updates of the MSDS until the product was being made and sold again. For

manufacturers with continuous processes and a stable product inventory, a reasonable time might mean a much shorter period. A number of participants suggested that OSHA specify what is meant by "reasonable" and include a specific time-frame in the final standard (e.g., Exs. 19-40, 19-172, 19-193, 123, 125, 131, 180, L-6). The time periods recommended varied, but we have decided that three months is a reasonable requirement for adding new and significant information to the MSDS. If the product is not currently being produced in the workplace, the information must be added before the chemical is used again.

Another issue of concern to participants in the rulemaking involved blank spaces on material safety data sheets. The proposal required chemical manufacturers to mark the MSDS when no information was found for a given category. The chemical manufacturer would be free to use whatever marking seemed appropriate—not applicable, not available, etc. In order to allow existing, properly completed MSDSs to continue to be used, OSHA stated that until such sheets are updated and marked as required, they would be assumed to mean information was sought but not found. It would thus be the manufacturer's responsibility to ensure that this interpretation is accurate. In other words, the manufacturers with sheets that have not been properly researched before completion were not being exempted from providing complete information by allowing blank spaces for an interim period.

The intent of the proposal was to eventually eliminate the practice of having blank spaces on MSDSs. Downstream recipients cannot be assured that each category of information was properly considered by the manufacturer in completing the sheets if blank spaces are permitted. The Conservation Foundation in its report addressed the need to mark blank spaces as follows (Ex. 18-2):

> * * *[I]f an LD50 acute toxicological test result is not reported on an MSDS, the reader cannot know definitively whether the information is unavailable, omitted by error, or simply not disclosed. Similarly, the absence of information on carcinogenic or mutagenic testing might lead the reader to infer that test results are negative, when actually these results may not be available or the manufacturer may have omitted the information either accidentally or deliberately. For certain important classes of information, whatever results are available should be presented; otherwise, the statement "not available" or "unknown" should be entered on the form.

Some respondents believe that permitting this practice will encourage some manufacturers to continue distributing inadequate MSDSs. For example, in a joint post-hearing comment submitted by the AFL-CIO, ICWU, UAW and USWA, it was stated (Ex. 180A):

> Specifically, under the proposed standard the agency indicates it would assume that blank spaces on a data sheet meant that a manufacturer had searched for the required information and that such information was not found. However, the record is replete with testimony showing safety data sheets are typically incomplete, failing to reflect known information (Tr. 102, 112, 187, 389, 567, 1052, 1357, 1902, 3090, 3163, 4014, 4099, 4153). Under the OSHA proposal, allowance of blank spaces would, in practice, permit continued use of these incomplete sheets.

Other participants objected to this particular provision because they believed it increased the liability of the receiving manufacturer to an unacceptable degree. The Adhesive Manufacturers Association indicated that (Ex. 19-156):

> The discussion relating to blank spaces on MSDSs concerns AMA. Blank spaces create the potential for

> unnecessary liability problems. If through some clerical or administrative error a space is left blank, someone could mistakenly assume that no hazard is associated with the particular listing. The use of some term such as "not applicable," "unknown" or "not relevant" would ensure better protection for the manufacturer, downstream receivers and workers.

Conversely, some employer representatives believed that interpreting the blank spaces as meaning information was sought but not found placed an undue burden of responsibility on the manufacturer distributing the sheet. For example, the National Paint and Coatings Association wrote (Ex. 19-62):

> 53310 * * * Such an interpretation is unfair and unwarranted in the context of the purpose of the MSDS which is to honestly convey useful hazard information. In addition, it fails to recognize human frailty and the likelihood of an inadvertent omission due to clerical error. To presuppose that the mere presence of a blank space is per se evidence that information was sought and not found places an overwhelming burden of absolute perfection on the preparer. Certainly a chemical manufacturer is responsible for the completeness and accuracy of the MSDS and will strive to assure that any omissions or errors are readily corrected * * *

In the final standard, OSHA has merely required that when there is no relevant information for a given category, the chemical manufacturer or importer should mark it appropriately. This should serve the original intent which is to eliminate eventually the practice of having blank spaces on distributed MSDSs. Marking the MSDSs will give extra assurance to employees and downstream recipients that all available information has indeed been included on the sheets.

Several commenters endorsed the use of OSHA's current Material Safety Data Sheet, Form 20, as a standard format for MSDSs (Exs. 19-46, 19-82, 19-98, 19-135, 19-160 and 19A-37). OSHA has determined that in keeping with the performance nature of this standard, a specified format or form should not be required, as long as the necessary information is provided. A number of companies have developed their own formats which they find most useful for their own facilities (e.g. Ex. 19-124). Anyone wishing to use the Form 20 may continue to do so, as long as they ensure that all of the information required by this final standard is provided.

Some participants also suggested that employers be permitted to prepare a single MSDS for a group of related chemicals or mixtures when the hazards do not vary significantly (Exs. 19-57, 19-63, 19-124, 19-194, and 19-209). OSHA has adopted this suggestion in the final standard, and allows one MSDS to be used for similar complex mixtures in certain situations.

6. *Employee information and training.* The final component of the comprehensive hazard communication program proposed by OSHA is employee information and training. Under the provisions of the proposed standard, the employer would be required to provide employees with training about the nature of the hazards they work with, and protective measures to be taken, at the time of initial assignment, and whenever a new hazardous chemical is introduced into the workplace.

Training serves to explain and reinforce the information presented to employees through the written mediums of labels and material safety data sheets. Labels and material safety data sheets will only be successful when employees understand the information presented and are aware of the actions to be taken to avoid or minimize exposure, and thus the occurrence of adverse effects. Training is critical to effective hazard communication—

it is the forum in which hazard information can best be presented in such a way as to result in workers taking protective action, and thus decreasing the possibility of occupationally-related chemical source illnesses and injuries.

Richard Fleming, in an article which appeared in the *Toxic Substances Journal* dealing with the employer's responsibility for informing workers, addressed the need for training as follows (Ex. 18-8):

> In the highly developed and specialized modern workplace, there is usually very little of the new worker's prior experience in the more normal outside environment that sensitizes or trains him or her to perceive the hazards present. Furthermore, a number of these hazards may in fact be imperceptible to the ordinary senses, or even to common sense.
>
> There is, then, no substitute for direct, specific information about the special and inevitable hazards confronted by a worker in a new work assignment. Nothing short of specific knowledge and experience in carrying out the job and the circumstances surrounding it can fully teach the safety needs of that job. It may take more than this, but it cannot take less. Thus, a new worker must rely on adequate and appropriate information and training from those who know the job best * * *.

The record contains considerable support for the concept of employee training programs, and endorses the need to include such requirements in the final standard (see, for example, Exs. 19-11, 19-48, 19-51, 19-119, 19-146, 19-207, L-1, 182, and 19A-18). Individual workers testifying as members of panels during the public hearings provided extensive support for the need and usefulness of training regarding workplace hazards. For example, the following testimony was presented by members of the United Steelworkers of America:

I think the education part of it has a lot to do with it because we had people that were using solvents and there was warning labels on it. The warning label said "Caution: Hazardous Substance. Do Not Get on Your Skin. Do Not Breathe Excess Amounts of it," and the people, they washed their hands with it and they breathed it and everything else until we told them what it was doing to them, how it was affecting their liver and was possibly a carcinogen.

Since then, our people don't wash their hands with it anymore and now they take the precautions—once they are provided with the proper information of what it actually could do to them, then they care.

(Foster, Tr. 973)

* * * Workers are human. They don't want to lose their hearing, or vision or ability to breathe or anything else and I think the big thing lies in education, proper education.

I think you folks ought to give it serious thought in promulgating any standard to put the burden and responsibility where it belongs, on the employer, to ensure that you have adequate training and education programs in relation to the hazards associated with any chemical.

* * * It really falls into the court of the local union in many cases to ensure that they advocate training and education programs. It shouldn't have to be, it should be mandated by law that all employers are responsible for that type of program.

(Brown, Tr. 973-74)

Employer representatives were also enthusiastic in their support of the need for training provisions in the final standard for hazard communication. The American Iron and Steel Institute stated that (Ex. 19-207):

> Employee education and training is a critical link in the successful implementation of any hazard communication regulation; without it, such a rule would be ineffective. AISI believes that the education and training provisions included in the current proposal are vital to the implementation of a complete and effective Hazard Communication Standard * * *.

Similarly, the American Textile Manufacturers Institute also endorsed the need for training provisions (Ex. 19-60):

> The most serious shortcoming of the earlier proposal lay in its failure to accept the importance of training. There was no way for the extensive specification detail to have overcome the training omission. Indeed, training must be at the center of any occupational program for dealing with hazards in the workplace. Every workplace has its own peculiar characteristics around which a training program must be designed and flexibility is needed depending upon their variety and degree of hazard. Thus can every worker be made to understand and be aware of the potential hazards he faces and learn to treat the chemicals he handles with the respect they are due.

The American Chemical Society, a professional organization, supported the inclusion of employee training as well (Ex. 19-206):

> The American Chemical Society believes that the use of good work practices is a very effective way to reduce chemical exposure risks. The responsibility to insure such practices lies with both the employee and employer. Good work practices can be maintained best through employee training 53311 and safety programs. Training programs should apprise employees of: (1) potential hazards to which they may be exposed; (2) methods of protection; (3) the

employee's role in reducing potential exposure; and, (4) employee rights and responsibilities under the standard.

Union representatives supported the concept of employee training, but were concerned that the training would not be adequate for purposes of hazard communication. For example, in a post-hearing submission from the AFL-CIO, ICWU, UAW and USWA, it was stated (Ex. 180A):

> Without question, effective training on workplace chemicals is an important part of a comprehensive hazard communication program. Workers and unions support and welcome meaningful training (Tr. 2518, 2530, 2541, 2551, 3390). Indeed, training on workplace chemicals is a major part of union health and safety activities (Exs. 49, 58, 74, 80, 90, 101, 107, Tr. 2550, 3390). However, the record clearly shows that, despite employers' claims to the contrary, meaningful training programs conducted by chemical manufacturers and employers are rare. Training on workplace chemicals is absent entirely or conducted by Supervisors who themselves have little information, as part of meaningless safety talks, "tool-box" talks, or "tail-gate" talks (Tr. 745, 1899, 2554, 3107).

The unions further stated that since, in their opinions, training efforts by industry have been inadequate to date, OSHA should ensure that training provisions in the final standard not be used to supplant other requirements. In particular, they believe that the disclosure of chemical identities of substances in the workplace is the only assurance workers will have of obtaining complete information on the hazards.

As previously stated, OSHA considers training to be one of three vital components in a comprehensive hazard communication program. No one of these three compo-

nents alone—labels, material safety data sheets, or training—can be demonstrated to be completely effective in communicating hazards. Therefore the final standard has not been designed to use the training requirements to supplant the other aspects of the hazard communication program. The purpose for having training provisions in the hazard communication standard is to establish minimum information requirements for these programs, and to help ensure that all employees will receive the information they need. As with the MSDS requirement, the fact that existing training programs are sometimes inadequate of non-existent simply demonstrates the need for having a comprehensive standard to require that such programs are implemented, and that they meet established criteria.

There is evidence in the record to support OSHA's contention that effective hazard communication, and particularly training, reduces the potential for chemical source illnesses and injuries. For example, the Ethyl Corporation established a pilot program to reduce lead exposures in employees, as measured by lead levels in their urine and blood (Ex. L-8). They instituted a comprehensive training program on the industrial hygiene aspects of lead exposures, and included means to motivate employees to use good work practices to reduce their exposures. Over the twelve months of the program, urine lead levels decreased by 40% and blood lead levels by 24%.

This reduction in exposure, as measured by biological monitoring, was attributed to the employee motivation techniques employed during the training program. The Ethyl Corporation is now expanding this program to other employees, and considers their training to be a cost-effective and proven method of reducing exposures.

Teamsters Local 2707 testified during the Los Angeles session of the public hearings that, following training they presented on hazardous chemicals to employees of

World Airways, the illness and injury incidence rate decreased nearly 30 percent. Ms. Nancy Garcia stated (Tr. 2826):

> The employer found a significant decrease in the number of injuries and illnesses, and I think that part of that has to do with an awareness on the part of the employees of the chemicals and of the nature of the hazards in the workplace.
>
> I think the more information you can give to people, the better informed they're going to be, the more responsible they're going to be, in both the employer and the employee.
>
> We expected some good results, but we didn't expect the 30 percent decrease.

Local 2707 provided further information regarding their training program, and the change in incidence rates, in a post-hearing submission (Ex. 153). From 1980 to 1981, the injury/illness incidence rate dropped from 26.7 to 20.65 for World Airways. Another employer who did not undertake such a training program with the union experienced an increase in their incidence rate during the same time period.

During the public hearings, OSHA asked members of a United Steelworkers worker panel to describe what types of training they thought would be appropriate and effective. They replied as follows:

> * * * we need some type of scare tactic to the workers to let them know right across the board the danger that's involved in the chemicals and as far as the training program is concerned. I think that the company should have these training programs on a regular basis and not one that is brought up simply because of an investigation or something of this nature.
>
> (Guilbeau, Tr. 2552)

> I'd say a formal training program, periodic retraining, you know, slide shows, what I would call perhaps based on a blood and gut film, you know, here is a picture of what it will do to you type thing of what the chemical will do to you, stuff like that, and information—what you call a training program, you know, more or less, scare the people or something like that so they'll never live with that stuff.
>
> (Phillips, Tr. 2552)

> Well, I'm in full agreement with the training. You can take any label you want to and no matter how good that label is, you know, people have a tendency to look over these labels like the one that is on these cigarettes right here. The Surgean General has determined that * * *. There are millions of Americans that have overlooked that every year.
>
> You take them same Americans, take them out and show them a good blood and gut film, give them first hand experience on what it will do to a lung or a heart or whatever, you know, that will change their minds. Training is the only way and retraining.
>
> (Walters, Tr. 2553)

These statements indicate that employees could assist their employers in designing training programs which will accomplish the desired effect of modifying worker behavior. Employee assessments of training and other hazard communication program elements can provide good feedback to the employer in terms of qualitatively assessing the effectiveness of the information transmittal. Some employers are already using such evaluative tools. For example, PPG Industries, Inc. included in their submission some comments received from workers concerning their program (Ex. 19-85). In addition, the Hazardous

Materials Identification System (HMIS) devised by the National Paint and Coatings Association (NPCA) includes a quiz to give employees which can objectively ascertain whether the presented information has been understood (Ex. 18-5).

The proposed provisions were performance-oriented, listing the categories of information to be transmitted to employees, but not specifying how this was to be accomplished. A number of participants endorsed this flexible approach (see Exs. 19-64, 19-67, 19-91, 19-176, 19-210, 167), while others suggested that the requirements should be more specific (Ex. 19-89, Tr. 2270-71). OSHA has made minor modifications to the 53312 requirements in response to specific comments, but in general, the training provisions are largely the same as those proposed. In particular, the final standard expressly requires employer to train employees regarding protective practices implemented in their workplace, and specifically states that employers must explain the labeling system used and how to obtain and use material safety data sheets.

Several participants suggested that training should be given when the hazard changes in the workplace, rather than each time a new chemical is introduced. Since in some facilities chemicals change frequently, retraining would be done almost constantly, even though the actual hazard of the operation does not change. (Exs. 19-45, 19-63, 19-67, Tr. 1316-17). Similarly, other commenters suggested that due to the large number of hazardous chemicals in some work areas, the employees should be trained on the hazards of the process or operation, rather than specific chemicals (Exs. 19-188, 19-201, 19A-18, 19A-19). This suggestion has been incorporated into the final standard. However, specific information still must be available to employees for each hazardous chemical on the material safety data sheets.

Other participants suggested that periodic retraining be provided (e.g., Exs. 19-114, 122, 131). Although OSHA

would certainly encourage employers to provide retraining if they wish to, the greatest need for training is prior to initial assignment, and when the hazard changes, requiring the employee to be aware of new procedures or protective measures. Since the employees will always have visual reminders of hazards in the form of labels, and will have ready access to detailed sources of hazard information (the MSDSs), these should serve to reinforce the information provided in initial training and the sessions provided when the hazard changes.

7. Trade secrets. One of the most difficult policy questions raised by this standard involves the treatment of hazardous chemicals that are considered trade secrets by the chemical manufacturer or employer. The general policy of OSHA reflected in this rule is that the interests of employee safety and health are best served by full disclosure of chemical identity information. OSHA acknowledges, however, and the record in this proceeding fully supports, the critical need to protect trade secret information because the economic well-being of the employer and its employees may be dependent upon the protection of such information, and once lost, its value as a trade secret cannot be recaptured. For these reasons, OSHA has a special responsibility to strike a particularly fine and creative balance in order to accommodate both the health interest in limited trade secret disclosure and the economic interest in trade secret protection. As discussed below, we believe that the record has pointed the way toward achieving this twin goal while minimizing any potential conflict between the two competing interests. It does so by permitting OSHA to narrowly define the circumstances under which specific chemical identity must be disclosed and to authorize the use of confidentiality restrictions that are necessary to protect the value of the trade secret to its holder. Both aspects of the rule are essential to the establishment of a responsible trade secret disclosure policy.

As a legal matter, OSHA has consistently taken the position that the Act requires OSHA to balance and accommodate employee occupational safety and health with the protection of trade secrets (45 FR 35248-51; 47 FR 12107). OSHA's basic legal authority to carry out this mandate has been upheld in a District Court decision, *Louisiana Chemical Ass'n et al.* v. *Bingam, et al.*, 550 F. Supp. 1136 (W.D. La., 1982) the appeal of which is pending in the Fifth Circuit Court of Appeals (No. 83-4099).

Implementation of this legal authority in the context of particular rulemakings is largely a matter of policy discretion. There is no one scientifically correct way to balance the competing interests. OSHA first faced this regulatory dilemma when it issued its rule on access to employee exposure and medical records, 29 CFR 1910.20. The records access rule took the approach of requiring the disclosure of all chemical identities to employees and their designated representatives, as well as their levels of exposure and health status data regarding "toxic substances", regardless of any trade secret claims. However, it permitted the conditioning of access to such information on the signing of confidentiality agreements, as well as the withholding of any trade secret process or percentage of mixture information. As the same time, OSHA expressly stated that the confidentiality agreement requirement was not intended to authorize the employer to demand penalty bonds or agreement to liquidated or punitive damages provisions. 29 CFR 1910.20(f); 45 FR 35274-75.

Responding to concerns expressed by industry representatives that the records access provisions were not sufficiently protective of trade secrets, OSHA's approach to trade secret disclosure in the hazard communication proposal was modified in several respects. First, a distinction was drawn between "high chronic hazard" chemicals and other hazardous chemicals with respect to the

employers' duty to disclose their specific chemical identities. Second, a distinction was made between treating physicians and others with a "need to know" with respect to their access to trade secrets. Third, OSHA expressed its neutrality with respect to the terms of confidentiality agreements by not including a prohibition on the use of "reasonable" penalty bonds, liquidated damages provisions, and the like. This latter proposal had previously been the subject of a proposed modification to the records access rule (46 FR 40492), but was subsequently merged into the overall reconsideration of the records access rule in recognition of the fact that the issue of confidentiality agreements cannot be viewed in isolation from related issues (47 FR 30429).

Thus the hazard comunication proposal permitted an employer to withhold precise chemical identity from anybody other than a treating physician if the employer could "substantiate that it is a trade secret" and that the chemical was not a "carcinogen, mutagen, teratogen, or cause of significant irreversible damage" for which there is a "need to know" the precise chemical name. When withholding such identity information, the employer was required to identify the chemical by a generic chemical classification which would provide useful information to a health professional and to disclose all other information required on the data sheet. When trade secret information was to be disclosed, the employer could condition employee, designated representative, and downstream employer access to such information upon acceptance of a "reasonable confidentiality agreement" which could "provide for compensation or other legally appropriate relief."

A number of commenters expressed general agreement with the approach taken in the proposal, although not without reservations in some cases (Exs. 19-40, 19-62, 19-65, 19-69, 19-73, 19-79, 19-91, 19-116, 19-119, 19-135, 19-146, 19-188; Ex. 182; Tr. 1318, 2023). However, the trade secret issue remained an area of great controversy

and wide disagreement. Several employers stated that the proposal was insufficiently protective of trade secret interests (Exs. 19-44, 19-63, 19-87, 19-115, 19-155, 19- 53313 165, 19-168; Ex. 177, 179). This view stemmed primarily from a belief that protecting trade secrets is of paramount concern to a chemical manufacturer, and essential to maintaining a viable business. The Chemical Manufacturers Association, while generally supportive of the proposal's basic approach, stressed the importance of trade secrets to them:

> Protection of trade secrets is essential to the chemical manufacturing industry. In the industry, formulations and the techniques for making them are an essential part of a company's edge over its competitors.
>
> The research that is required for the development of new chemicals and mixtures will be undertaken only if the results of the research are protected from competitors to permit a return on the investment in research. (Ex. 19-91)
>
> Numerous chemical manufacturers, as well as other companies and trade groups within the coverage of this proposed standard, have testified to the importance of trade secret protection to them. While it is difficult to attach a reliable monetary figure to this protection, there can be little doubt that the protection of proprietary information is of paramount importance. Indeed the very existence of the extensive legal protection afforded under the patent system and trade secret law attests to the importance of encouraging research by permitting those who develop a new product to obtain financial rewards from the sale of that product. (Ex. 182)

The need for greater protection of trade secrets was particularly expressed by some manufacturers in specialized lines of business:

For [a chemical specialty] manufacturer, its trade secrets may constitute its most valuable assets. Such trade secrets usually cannot be protected by patents. Were the rule to require revelation of trade secrets to customers, confidentially agreements would not preclude the customers from switching to other sources of the same products which bear no development costs, resulting in irreparable injury to the manufacturer, * * * [or] from reverse engineering the competitive product, also injuring the manufacturer * * *.

By insisting on revelation of trade secrets, the proposed rule substitutes a requirement to provide information for a mandate to communicate hazards. Unless OSHA can adequately restrict its exclusion from trade secret protection to circumstances where identified persons have a need to know directly related to employee safety health, OSHA should not require that trade secrets be revealed to anyone except physicians (and then on a confidential basis).

(SOCMA, Ex. 19-44)

* * * formulas cannot be safeguarded once they are disclosued * * * Both [the flavor and fragrance] industries rely heavily on their abilities to maintain the secrecy of valuable product formulas that are painstakingly developed over long periods of time and at great expense. It is no exaggeration to say that these secret formulas are the primary assets of the industries * * *. Trade secret information should be disclosed (only) in those cases where there is a significant hazard to workers and the disclosure will significantly alleviate the hazard.

(D. Thompson, Flavor and Extract Manufacturers Association, Fragrance Materials Association, Ex. 27-15)

Basic chemicals are generally marketed under their chemical name. There is very little need for restric-

> tion or secrecy regarding the chemical identity of these products. In chemical mixture formulations, however, the ingredient information is the crucial trade secret, very often the only trade secret. In mixtures, it is the synergism, antagonism and overall blend of chemical and physical properties of specific chemical substances in specific ratios that give the mixture unique properties and allows it to function as desired. This specific formulation of a firm's product is the key to its competiveness in the marketplace. Once the chemical ingredients have been ascertained, formulation is easily duplicated. For this reason, disclosure of the chemical ingredients destroys the secret or confidential nature of this specific product formulation * * *. Because without trade secret protection the chemical identity disclosure provision would unduly jeopardize trade secrets of a small chemical processor like Master Chemical, this protection must be provided for in any final rule.
>
> (Master Chemical Corporation, Ex. 19-87)

By contrast, unions and other employee advocates approach the trade secrets issue from an opposite perspective. In general, they argue that to achieve the occupational health goals of the standard, all chemical identities must be disclosed to employees and their designated representatives, subject only to the kinds of basic confidentiality agreements permitted by the records access rule when *bona fide* trade secrets are involved. Exs. 19-172, 19-175; 122; 123; 168; and 180A; Tr. 305, 612, 1647, 1838, 1938, 2092, 2235, 2643, 2693, 2934, 3057, 3105, 3279, 3602, 3640, 3788, 3978, 4031, 4107). These representatives contend that the trade secret provisions would inadequately protect employee health interests because they maintain that specific chemical identity rather than hazard warning information is the essential ingredient of a hazard communication standard (AFL-CIO, et al., Ex. 180A):

> While the two are inextricably linked, chemical identity is the key—you cannot get chemical identity from a hazard warning, but the chemical identity will provide you with access to hazard information.

Viewed from this perspective, the proposal "improperly subordinates worker health interests to employer trade secret claims" because "for those chemicals deemed trade secrets, specific chemical identity may be withheld, subject to certain conditions, even though the employer has determined that the chemical is hazardous." (AFL-CIO et al., Ex. 180A, p. 55).

Downstream employers who purchase chemicals from chemical manufacturers and are dependent on them for chemical identity information generally expressed views similar to the unions' with respect to their own need for access to trade secret information:

> * * * a manufacturer should not be allowed to withhold the chemical identity of any chemical which "contributes substantially" to the hazards of a mixture and for which there is a need to know the specific chemical identity in order to provide a safe workplace. Downstream employers, for example, may need to know the specific chemical identity of an ingredient in order to monitor the level of airborne contaminants. This would be true even if the ingredient does not fit the description listed in subsection (g)(1)(ii) [for "high chronic hazards"].
>
> (American Paper Institute, Ex. 1973)

> We feel that the latitude provided chemical manufacturers in identifying most chemicals by the broad generic chemical classification will substantially hinder the efforts of safety and health professionals to determine the requirements for safe usage of specific products.
>
> It is commonly accepted that both the product constituents and the method of application are equally

important to determining the potential hazard posed by a particular product. By withholding specific identification of chemicals in lieu of generic chemical classifications, the user's hazard evaluation process can be severely compromised. Some chemical manufacturers have contended that the use of generic classifications, in conjunction with their assessment of the potential hazards, would provide sufficient information for users to determine the requirement for safe usage. We feel that this argument falls short since chemical manufacturers cannot be familiar with the variety of ways in which their products may ultimately be used. * * * We feel the benefits to be derived in fully disclosing the constituents of a hazardous material far outweigh the risk (real or imagined) that may be incurred by chemical manufacturers as a result of disclosing this information.

(Caterpillar Tractor Company, Ex. 19-201)

The proposed standard deals with the generally recognized need for trade secret protection in some depth, but the proposed standard does not address some circumstances which a downstream user of chemical products may encounter.

For example, Chemical Product A, containing xylene (TLV=100 ppm) as a component known to an employer and its employee, could be used in such a way as to produce a known employee exposure below the OSHA TLV. At the same time, Chemical 53314 Product B which contains an unknown amount of trichloroethane (TLV=350 ppm) because of trade secret status may be used by the employee in such a way as to produce a simultaneous exposure that exceeds the additive TLV limitations for mixtures imposed by existing OSHA regulation. Thus, the employee's health may not be adequately protected, and his employer could be subject to an OSHA citation.

> We suggest that the proposed standard require that a chemical's identification be disclosed if such chemical may potentially produce synergistic or additive toxic effects with other chemicals and that the precise chemical name be disclosed in any case in which the chemical products contains a component regulated by name, by OSHA. (West Point Pepperrell, Ex. 19-150)

Similarly, both the National Paint and Coatings Association and the Motor Vehicle Manufacturers Association testified that precise chemical identity is essential to their efforts as downstream employers to evaluate the hazards of chemicals they purchase, and that they undertake considerable effect to obtain this information from their suppliers when it has initially been withheld on trade secret grounds. (Tr. 564, 675-81, 3684-86). Because of their need for this information, the MVMA expressed concern that the proposed trade secret provisions might result in an overuse of the trade secret exemptions permitting the withholding of chemical identity under certain conditions (Tr. 3682). In general, however, these employers report less difficulty than do the unions in obtaining trade secret information concerning chemical identities when needed for occupational health purposes (Tr. 598-605, 679-81).

These basis positions on the trade secret issue led to some specific criticisms of the proposal. Several commenters said that there is a need to define "trade secret" (Ex. 19-65, 19-91, 19-155, 19-164, 19A-11). The CMA (Ex. 19-91; Ex. 182), Procter and Gamble (Ex. 19-116), and Michelin Tire (Ex. 19-155) each recommended that a definition be taken from the Restatement of Torts (s757), since it is widely accepted and has been adopted by the common and statutory law of many states. Under this definition, chemical identity could be considered trade secret if, essentially, it is not known or used by a competitor. OSHA has incorporated a slightly modified version of this definition into the final standard.

While the Restatement of Torts definition is generally recognized as an appropriate basis for a regulatory definition, a more difficult question is whether a chemical in commerce whose identity can be ascertained by well-known analytical techniques—"reverse engineered"—should be considered known to the competitors and therefore not a proper subject for a trade secret claim. Underlying this discussion is a wide disparity of opinions on the relative ease with which complex chemical mixtures can be "reverse engineered."

> With modern analytical laboratory equipment, and a limited amount of time and funding, the constituents of most chemical products can be readily identified. This vulnerability of product constituents to identification, in our opinion, negates the validity of the standard's trade secrets provision.
>
> (Caterpillar Tractor Company, Ex. 19-20)

> The plain fact is that most chemical identities are not and cannot be trade secrets today because of the relative ease with which they can be discovered by independent means through gas chromatography and mass spectrometry. Although some natural food flavorings and chemical intermediates may attain trade secret status, the vast bulk of chemical identities simply are not a secret under the law. A heavy burden should be placed on those who claim trade secret status unless than can fit into one of these small categories.
>
> (California Department of Industrial Relations, Ex. 22C-18)

> Typically a trade secret is claimed in a case where a solvent manufacture's supplier, for example, takes a—let's say an aliphatic hydrocarbon and adds a chlorinated hydrocarbon to raise the flash point, sells it as safety solvent, charges three times for the mix-

ture what his costs were for the ingredient, says that's trade secret.

Now, you know, in all those cases the buyer or a competitor could easily obtain it and analyze it, if they cared to. So it's really not a trade secret from anyone except the workers forced to use it.

(Mr. Michael Wright, United Steelworkers of America, Tr. 854)

In general industry presents a different picture of the relative ease of reverse engineering complex chemicals that are trade secret:

The makeup of a chemical product, which is the essential knowledge providing the competitive advantage to a manufacturer, is frequently not ascertainable by competitors through analytical processes. "Reverse engineering" is not always possible. Chemical reactions may mask the identity of an ingredient, and materials present only in small quantities may not show up in laboratory analyses. Procter & Gamble estimates, for example, that an analysis to determine in detail the ingredients of its BOLD-3 would cost as much as $300,000—and might still be unsuccessful. Thus in the absence of an OSHA disclosure requirement, these trade secrets would not be available to competitors.

(Chemical Manufactures Association, Ex. 19-91)

It is the presence of traces of trade secret ingredients or unique combinations of ingredients, that make those fragrances successful. History shows that the formulas of leading perfumes have been maintained as trade secrets for decades.

(Mr. Wallace Dempsey, Fragrance Materials Association, Tr. 3417)

The popular belief that it is now a simple matter for a competitor to determine the exact chemical

> composition and percentages of various formulations by "reverse engineering" is incorrect. While reverse engineering is theoretically possible, its usefulness is extremely limited. The analytical procedures involved in reverse engineering are extremely complicated and expensive. The complexity of the procdures make it virtually impossible to obtain accurate, reliable, results. Moreover, the cost of the procedures makes it economically prohibitive. The cost has been estimated to be between $50,000 and $1 million dollars or more per sample, with no guarantee that the exact composition will be determined. However, if the precise chemical components of a product are supplied, via labels or any other means, the percentage of any given chemical in the formulation is relatively easy to determine. As a result, once the precise chemicals are known, the product can be duplicated by any competitor who cares to spend $500 to $10,000 to determine the precise percentage of each chemical in the formulation.
>
> (Master Chemical Corporation, Ex. 19-87)

OSHA has determined that the record does not provide adequate support for using "reverse engineering" capability to modify the trade secret definition. It is clear from the statements quoted above that there is no consensus regarding the ease or practicality of reverse engineering. Furthermore, as a practical matter, it is impossible for the Agency to develop criteria for when reverse engineering would be considered feasible and thus would negate a trade secret claim. Many products can be reverse engineered if sophisticated analytical techniques are applied, and yet cannot be if less advanced technology is used. The determination of what is "practical" in terms of reverse engineering capability rests with this degree of analysis, rather than with a definitive finding of "ability" to be reverse engineered or not. Furthermore, the definition of trade secret says that the competi-

tor or potential competitor does not know *or* use the information. Thus, even though a competitor could theoretically "reverse engineer" and discover the components of a product, if this information is not in fact used, it remains a *bona fide* trade secret.

The question of trade secret definition also relates directly to a second set of comments involving the proposed requirement that the employer be capable of substantiating that the withheld information is a trade secret. 53314 The unions and some employers testified that excessive denial of information on unsubstantiated trade secret grounds has been a significant problem to date. The AFL-CIO summarized the situation as follows (Ex. 180A):

> The record demonstrates that employer and chemical manufacturer trade secret claims have routinely been overbroad (Tr. 896, 1491, 1492, 1495, 1524, 1539, 3275-6, 3279). Union requests are frequently met with an initial employer response that all or a large proportion of chemicals are trade secrets (Tr. 896, 1890, 1495, 3640). When subjected to further scrutiny, these claims are often found to be invalid (Tr. 853, 1891) * * *
>
> The unions are not alone in their experience of broad trade secret claims. The Motor Vehicle Manufacturers Association, Ford Motor Company, Caterpillar Tractor Corporation, and Department of Defense all report difficulties in securing chemical identity information in the face of trade secret claims (Ex. 46, 102, 113, App. 1, Tr. 604 * * *

Although the CMA has cautioned that past experience in the absence of a standard is not a proper guide to how many trade secret claims will be made and predicts that the number of trade secret claims will be few (Ex. 182), the concern has been expressed that the substantiation requirement of the proposal would not prevent unjustified

claims (Exs. 19-51; 180A). For example, the AFL-CIO et al stated (Ex. 180A):

> Substantiation of trade secret claims is required but there is no requirement to commit the substantiation to writing or make it available for review to employees, designated representatives or OSHA. Thus, manufacturers and employers will be allowed to continue overly broad, invalid trade secret claims with no justification.

Certain employers whose primary concern is the protection of trade secrets have also expressed the need for a mechanism to be created whereby OSHA could monitor trade secret claims and referee, in the first instance, disputes that arise over the validity of a claim (Exs. 19-155; 27-6, 27-10, and 27-27). The suitability of conventional OSHA enforcement mechanisms for this purpose has been described by the Michelin Tire Company (Ex. 19-155):

> It is Michelin's position that disputes about trade secret claims under the labeling standard should be resolved through conventional OSHA enforcement mechanisms. If an employer conditions the release of trade secret information on the execution of a confidentiality agreement and the employee or designated representative objects to the employer's decision, the employee should file a complaint with OSHA alleging that the labeling standard has been violated. OSHA should then make a limited inspection or request for information to determine if a citation is warranted. If OSHA issues a citation, litigation under normal administrative enforcement procedures should resolve any disputes between the parties.

OSHA agrees that the statutory enforcement mechanism will be satisfactory to investigate and in many cases settle disputes of this nature. In order to clarify the enforcement proceedings to be followed, OSHA has incorporated the specific steps into the provisions of the

final standard. To facilitate these proceedings, OSHA is requiring that requests for trade secret information be prepared in writing, with supporting documentation, and that any denials of such requests also be written and include appropriate evidence. Then if the matter is referred to OSHA to settle any dispute between the requesting party and the employer protecting a trade secret, the Agency will be able to base a decision upon a review of these written materials. Should the matter not be resolved to the satisfaction of all parties, it may result in a citation and referral to the Occupational Safety and Health Review Commission (OSHRC) for judical review. The OSHRC Judge may decide the case based on an *in camera* review of the documents prepared by the parties. The matter will then be resolved through the normal OSHRC enforcement proceedings.

Many comments were received on other aspects of the proposed trade secret provisions. For instance, a number of commenters observed that the authorization to withhold the "precise chemical name" under certain conditions suggested that the CAS number would nevertheless have to be disclosed, thereby negating the protection afforded (Exs. 19-43, 19-46, 19-52, 19-85, 19-115, 19-140, 19-146, 19-155; Tr. 2997). Since this was not OSHA's intent, the final standard has been written to make clear that all specifically identifying information may be withheld if the chemical identity is being withheld as a trade secret.

A more fundamental set of questions involves the issue of which trade secrets, if any, should be required to be disclosed, under what circumstances disclosures should be required, and to whom this information is appropriately disclosed. Discussion of these questions was generally in the context of addressing the proposed requirement that only "high chronic hazard" chemicals needed to be disclosed to downstream employers, employees and designated representatives with a "need to know," but that in

any event, all trade secret identity information must be disclosed to a treating physician.

The proposal equated "high chronic hazard" with any "carcinogen, mutagen, teratogen, or a cause of significant irreversible damage to human organs or body systems" for these purposes. Other than some general agreement with the proposal, there was little or no specific support for having regulatory consequences turn on a distinction between these chemicals and other hazardous chemicals. Numerous commenters criticized the lack of definitions for the critical terms as making the provision unduly vague (Exs. 19-44, 19-46, 19-63, 19-65, 19-76, 19-89, 19-109, 19-123, 19-155, 19-164, 19-196, 19-204, 19-219; Tr. 2185, 2200-1, 2324). Some commenters thought that the terms, unless narrowly defined, would result in the overcategorization of trade secrets as "high chronic hazards" (Exs. 19-44, 19-46). For example, SOCMA stated (Ex. 19-44):

> Furthermore, the proposed rule could be interpreted to exclude from trade secret protection virtually all substances or mixtures. Just as any substance could be a "hazard" under the proposed definition, so any hazard could be considered a "cause of significant irreversible damage to human organs or body systems", at a sufficiently large exposure level.

Other commenters expressed concern that these categories could be interpreted too narrowly, both because inherent scientific uncertainty may permit a holder of trade secrets to deny that virtually any chemical is a proven "carcinogen, mutagen, [or] teratogen" (Tr. 1938, 2185-6, 2200-3) and because a chemical could cause "significant" damage to humans that may nevertheless be reversible (e.g., Kepone, DBCP) (Ex. 180A; Tr. 3641-2).

Lack of definition was not the only criticism directed at the proposed distinction between "high chronic hazards" and other hazardous chemicals. Arguments were also made that the proposed distinction was both overinclusive

and underinclusive. Thus, a few commenters argued that "mutagens" should not be considered "high hazard" because "no link between mutagenicity and workplace safety has been demonstrated" (Exs. 19-91, 19-115, and 19-105). On the other hand, arguments were made by several employers that the categories of hazardous chemicals to be disclosed on a "need-to-know" basis should be expanded to include "suspect" carcinogens, mutagens, and teratogens (Ex. 19-90), OSHA regulated substances (Ex. 19-90, 19-150), chemicals that have established TLV's (Ex. 19-90), and chemicals that cause synergistic or additive effects when combined with 53316 other chemicals (Ex. 19-150). In addition, the American Lung Association commented that chemicals which cause acute toxic effects should be included in any mandatory disclosure requirement regardless of trade secrets (Ex. 19-154). The Federal Advisor Council on Occupational Safety and Health suggested that the standard should require the disclosure of "all hazardous chemicals which are recognized hazards that are causing or likely to cause death or serious physical harm to an employee, or if those chemicals are known to be carcinogens, mutagens, teratogens, or sensitizers when in low concentrations." (Ex. 125). And the AFL-CIO and supporting unions recommended that the more inclusive term "reproductive toxin" be used instead of "teratogen"; that the "significant irreversible damage" category be replaced by all chemicals which cause "a material impairment to health"; and that the "need to know" qualification be dropped (Ex. 180A).

A more fundamental criticism was that a distinction based on degree or kind of hazard is not a rational basis for making a categorical determination that certain trade secrets must be disclosed and others need not. For example, The CMA stated (Ex. 182):

> The hearings have not, however, provided sufficient reason to maintain the proposed standard's special treatment of the so-called "high chronic haz-

> ards." It has not been established that trade secret information that might be revealed under this provision (subsection (g)(1)(ii)) would add to employee protection. Epidemological studies based on this information remain a rarity. There has been little evidence that trade secret claims have posed a barrier to such studies that would otherwise have been undertaken, much less that the limited category of trade secrets under the proposed standard would interfere with studies of this type.
>
> Rather, the same principles that govern the release of trade secret information for other hazards should logically be applied to the chronic hazards. As the foregoing comments have demonstrated, the proposed standard reasonably reconciles disclosure interests and trade secret interests. There is no basis in the record for the special treatment of the "high chronic hazards."

This position was generally shared by a number of employer interests (Exs. 19-46, 19-79, 19-111, 19-123, 19-147, 19-164). By the same token, the recommendation of the AFL-CIO supporting unions was sufficiently broad as to constitute a rejection, from the opposite perspective, of the proposed different treatment for "high cronic hazards" and other hazardous chemicals as well. Thus, the proposed approach with respect to "high chronic hazards" was not favored by either employer or employee interests.

Many of the same commenters who believed that no special status should be afforded to "high chronic hazards," however, agreed that the "need to know" concept is an appropriate basis for making regulatory decisions. At one level, this qualification on trade secret disclosure takes the form of saying that trade secret identities should not have to be routinely revealed on labels and data sheets, where virtually anyone regardless of need

can see the information (Exs. 19-47, 19-123; Tr. 700-1). At a somewhat different level, support for the "need to know" concept was expressed in terms of saying that trade secret information should only have to be disclosed in response to a request for the information from somebody who has a legitimate health need for it (Ex. 19-91, 19-155, 19-185; Ex. 167; Tr. 763). For example, the CMA stated (Ex. 182):

> There is no real conflict between the interest of the employee and the employer's interest in preserving its trade secret unless the employee has a real need to know the identity of a chemical. The "need to know" standard is an appropriate means of balancing these interests.

The Celanese Corporation commented (Ex. 19-185):

> * * * this standard should only disallow trade secrecy protection where the employee needs to know to protect himself and where the downstream employer needs to know to protect his employees * * *.
>
> Celanese suggests that OSHA take a different approach to this problem. For chemical manufacturers: if there is a need for a downstream employer to monitor his employees' exposure to a chemical, there is a need to know the precise chemical identiy.
>
> For employers: if there is a need for an employer to monitor exposure of his workers to a chemical (whether he does it or not), there is a need for the employee to know its identity.

While the unions expressed concern that the "need to know" phrase "could be used to bar effective access to critical information" (AFL-CIO et al., Ex. 180A), in general they agree that there is a balance to be struck between the needs of employers to protect legitimate trade secrets and the needs of employees to obtain in-

formation concerning legitimate health interests (Tr. 844, 903, 2215-16, 3291, 3652, 4122-23).

Based on the information provided by various parties concerning the uses for which chemical identity information is necessary (e.g., Exs. 19-51, 19-207; Tr. 1945-6), OSHA considers the following to be purposes which demonstrate a medical or occupational health need to know scientific chemical identity under the provisions of the final standard:

1. To assess the hazards of the chemicals to which employees will be exposed.

2. To conduct or assess sampling of the workplace atmosphere to determine employee exposure levels.

3. To conduct pre-assignment or periodic medical surveillance of exposed employees.

4. To provide medical treatment to exposed employees.

5. To select or assess appropriate personal protective equipment for exposed employees.

6. To design or assess engineering controls or other protective measures for exposed employees.

7. To conduct studies to determine the health effects of exposure.

With respect to the question of who should be given access to trade secret information, there was general agreement that a treating physician should have access to any trade secret chemical identity that is needed for medical diagnosis or treatment of an employee exposed to the chemicals (Exs. 19-44, 19-46, 19-87, 19-88, 19-155, 19-193; Ex. 182; Tr. 598).

> * * * whenever a physician requests specific ingredient information for our products this information is provided to the doctor without hesitation. Master Chemical has no objection to supplying what-

> ever information a physician may deem necessary for the treatment of a patient. On occasion we have even provided samples of the raw materials that make up the product. Master Chemical feels secure with the professional ethics of physicians and the confidentiality of their files.
>
> (Master Chemical Corporation, Ex. 19-87)
>
> The desirability of requiring disclosure to treating physicians—under terms of confidentiality—is undisputed. The proposed standard clearly meets this employee interest by requiring disclosure.
>
> (Chemical Manufacturers Association, Ex. 182).

To this, some employers would add the qualification that even a treating physician should be required to document the need for the trade secret identity (e.g., that general chemical classification and toxicological information will not suffice) and enter into a confidentiality agreement (Exs. 19-44, 19-63, 19-158, 19-193).

While nobody objected to trade secret disclosure to treating physicians under appropriate circumstances, many commenters criticized the proposal for not providing the same general access to other health professionals (Exs. 19-40, 19-51, 19-73, 19-89, 19-161, 19-207, 19- 53317 211; Exs. 158, 180A; Tr. 442, 558, 763, 1945-46, 960-61).

> MVMA regards the primary objective of this standard as prevention of unsafe and unhealthful exposures. To meet this objective health professionals, other than the treating physicians, need to be aware of health problems which may be the result of occupational exposure to a substance or mixture designated as trade secret. Such health professionals would include those responsible for the industrial hygiene programs and environmental control programs (i.e., appropriate disposal). MVMA recom-

mends that such health professionals be included in obtaining information on a confidential basis.

(Motor Vehicle Manufacturers Association, Ex. 19-51)

I think certainly on a need to know basis, any member of a health care team, whether it is the physician, industrial hygienist, the occupational health nurse, safety professional, certainly needs to have information available to them, but on a need to know basis.

(Mr. L. Keller, PPG Industries, Tr. 763)

With regard to preventive medicine, withholding chemical identity information interferes with the ability of a physician hired or retained by a user employer to devise a proper medical surveillance program. For example, if the manufacturer of a chemical has not performed an adequate hazard evaluation and fails to mention the hepatotoxic effects of a trade secret ingredient, how will the company doctor catch the mistake and know to include liver function tests in a medical surveillance program?

Or if biological monitoring is desired to assess chemical exposure or body burdens, how will the company doctor specify a test if he or she doesn't know what chemical or metabolite to test for?

Physicians who are consultants to labor unions also have a proper need to know chemical identity information. Labor unions use consulting physicians to review the adequacy of company designed medical surveillance programs and just as with the doctors retained by the user employers, labor union doctors must know the chemical identities of work materials to independently arrive at a proper surveillance program.

In selcted cases, physicians for labor unions also review the medical records of members who have suffered serious illness suspected of being work-related. Although the unions' doctors act as consulting physicians and not treating physicians, the union doctors can have a valuable role in suggesting further clinical testing or laboratory analysis to help determine work-relatedness.

* * * I, myself, am called upon to review industrial hygiene programs of companies where we have members and if I don't know what chemicals the people are working with, I have no idea, for one, whether—the kinds of controls that are in place are adequate. Whether they should be doing more monitoring to look for exposure. And if the type of personal protective equipment being provided—which there normally is some provided—is adequate to do the job.

(Mr. M. Nicas, IUE, Tr. 1945-46; 1960)

The one thing that I was going to add as far as epidemiology that we face situations where outside researchers have been brought in by local unions to do studies and they haven't been able to get a lot of different kinds of information, but some of that has been chemical identity information, trade secret information that has made their studies much more difficult.

(Ms. J. Gordon, IUE, Tr. 1960-61)

* * * these health professionals (consulting physicians, epidemiologists, industrial hygienists, toxicologists, or other health professionals) need full chemical identity information to evaluate potential health problems from actual exposure and recommend and institute appropriate controls (Tr. 442, 558, 763, 1960, 3304). Without full access to chemi-

cal identity information worker health protection cannot be assured (Tr. 564, 810, 1483, 1513, 1940, 2037).

(AFL-CIO et al., Ex. 180A)

Since other health professionals (e.g., occupational nurses, industrial hygienists, toxicologists; etc.) may have a need to know certain proprietary information, we recommend that "any necessary health representatives" be added to "treating physician." In this way, pertinent data can be made accessible to all critical personnel involved in the occupational health care system, without unduly burdening physicians with the sole responsibility for information collection.

(American Iron and Steel Institute, Ex. 19-207)

The CMA panel presented the only direct refutation of the arguments in favor of broadening the access provided to "treating physician" to encompass other health professionals who need identify information to carry out their occupational health duties. They stated that the greater urgency involved in a medical emergency where chemical identity is crucial to a specific diagnosis or treatment warrants special exception for treating physicians; and that with other health professionals, it is often sufficient to provide them with chemical and toxicological information which does not reveal the specific trade secret identity. At the same time, they recognized that there may be some instances where specific trade secret identity should be provided to other health professionals subject to confidentiality agreements (Tr. 1204-11). For instance, Dr. Curtis Smith stated (Tr. 1207):

I'd like to add that certainly we are interested in working with the professionals in other companies to help them in protecting their employees, but that

> —if confidential information is involved, that does take some working out of confidential agreement or of providing the information without reaching the trade secret.

Moreover, some commenters expressed concern about providing access to "designated representatives" (other than treating physicians) in general without focusing on the "other health professional" issue. In addressing this question, the CMA panel drew a distinction between access by local union representatives who work inside a plant, and union representatives from outside the given workplace where the identity of a trade secret chemical is being sought (Tr. 1087-88, 1088-89):

> Most union representatives are employees also * * * I am talking about the local union representative. The local union representative is an employee and as such he would have as much information as any other employee.
>
> Where it was a company proprietary bit of information he would also have the same obligation to keep that confidential within the confines of the company. So, there is no bar against the union representative provided it is on a localized basis.
>
> But the (international) unions represent many different clients, so that they have a multiplicity of relationships and in that regard represent the outside world. The other fact that has to be kept in mind and it is critical for a trade secret, is how many people know about it and under what conditons was it made available. The more people who know a trade secret, the less it is a trade secret.

In its post-hearing comments, the CMA suggested the following on the question of "treating physician" versus "designated representative" access in general (Ex. 182):

> Two employee witnesses on behalf of the ACTWU testified that disclosure to a treating physician would

> fully satisfy their interest in chemical identity information. (Tr. 4111, 4013).
>
> (Another) interest, in access to chemical identity to permit the union to perform its own evaluation of the material, has been asserted by some union witnesses (although the testimony of the employee witnesses just described suggests that this interest may be of more concern to union officials than to the workers). Provision of trade secret information to a union is a matter of concern to many companies, in part because the union may well represent employees from competitive companies, thereby adding to the risk of disclosure and the harm in case of disclosure.

It argued that the issue of union access to trade secrets is best left to NLRB jurisdiction. Similarly, Michelin Tire Co. recommended modifying the definition of "designated representative" to encompass only "physicians" (Ex. 19-155):

> By limiting the "designated representative" concept to physicians, several goals will be accomplished. First, the employee will have complete personal access to the information 53318 required by the standard regardless of any limitation on the concept of "designated representative." Second, the employee may designate a representative who can effectively respond to any medical problem arising from the hazard communication information. Third, the employer must disclose sensitive information only to individuals who are subject to ethical rules of conduct and disciplinary sanctions. While unauthorized disclosure of trade secrets and confidential information is still possible, it is unlikely when release is limited to licensed individuals acting in their professional capacities.

Neither of these comments, however, explain why other health professionals have a less legitimate need for identity information than do physicians, or why they are less trustworthy to protect trade secret information given to them in confidence to carry out their professional health duties.

Based on this record, OSHA has decided to provide access to trade secret chemical identity to health professionals providing occupational health services to employees, while permitting the chemical manufacturer, importer or employer to withhold such information from other "designated representatives" who are not health professionals. It is noteworthy that neither downstream employers nor unions who argued for broadened access to trade secrets made specific arguments that such access was necessary for non-health professions within their organizations. Indeed, they indicated that it was their practice to restrict their own access to such information to their health professionals and, as necessary, exposed employees.

> (Confidential information) is available only to the health and environmental professionals, all of them are aware of the confidential nature and how we treat it. It's maintained centrally at staff rather than out in the operations.
>
> The only exceptions to that would be (if) one of the physicians at one of our operations, or medical, wanted to get that information for medical purposes * * * They would have access to that.
>
> (Mr. L. Roslinski, Ford Motor Company, Tr. 599-60)
>
> We will readily agree that the only people in the union who will have access to that kind of information (i.e. trade secret chemical identity) are several of us who are working on that case specifically and as far as the union is concerned are the ones who need to know and that's typically—For example: one

> of our industrial hygienists, perhaps Dr. Parkinson, perhaps one other person.
>
> (Mr. Michael Wright, United Steelworkers of America, Tr. 903)

Except in a medical emergency, the standard permits access to trade secrets by health professionals to be conditioned on a written statement of need and the signing of a confidentiality agreement, conditions which most commenters believed to be essential to striking a proper balance between the legitimate need for trade secret protection and the legitimate health needs of employees. The standard, however, no longer draws a distinction between "high chronic hazards" chemicals and other hazardous chemicals for purposes of access, since the record did not support the distinction as providing a rational basis for balancing the competing interests. In addition, in response to a comment requesting clarification on the question of OSHA's own access to trade secrets under the standard (Ex. 19-155), the standard explicitly provides that OSHA shall be provided access to such information upon request, and further states that any trade secret claim "shall be made no later than at the time the information is provided to the Assistant Secretary so that suitable determinations of trade secret status can be made and the necessary protections implemented."

It should be noted that in providing for access by health professionals and in eliminating the proposed disclosure requirements for certain "high hazard" chemicals, direct employee access to the specific chemical identities of such substances has been eliminated from this standard. Under the proposed standard, employees or their designated representatives would have had access to such identities if there was a "need to know" the precise chemical identity. The reasons for eliminating the distinction for disclosure of identities between "low" and "high" hazard chemicals has already been described. In addition, OSHA has indi-

cated in the discussion various purposes for obtaining such information that would constitute a "need to know." A review of these purposes reveals that by and large professional training would be required for any of these activities. Given the lack of control a chemical manufacturer or importer has over "downstream" employees, OSHA believes that providing access to trade secret chemical identities only to health professionals on a confidential basis will protect these employees adequately while providing protection for the *bona fide* trade secrets of employers. This is not to say that "downstream" employees are more likely to disclose trade secrets or violate confidentiality agreements than health professionals, but it is an unmistakable fact that the more people who have access to confidential information, the more difficult it is to preserve its secrecy or to locate the source of a leak if one occurs. In any event, employees will continue to have restricted access to the identities of all toxic substances known to their own employers on a non-confidential basis under the records access rule.

The final area of discussion involved the issue of confidentiality agreements. The focus of this discussion was on the question of whether the standard should explicitly authorize or prohibit the practice of requiring penalty bonds or liquidated damages provisions in such agreements. As noted earlier, this question was the subject of a prior proposed modification of the records access rule, the docket of which has been incorporated into the record of this rulemaking (Ex. 27). A number of employers commented that OSHA should permit the use of such contractual devices to strengthen their remedy in the event of an unauthorized disclosure of trade secrets (Exs. 27-6, 27-7, 27-9, 27-10, 27-11, 27-12, 27-14, 27-18, 27-19, 27-20, 27-21, 27-23, 27-25, 27-26, 27-27, 27-37). Several employers, however, including some who supported the proposed change, stated that confidentiality agreements, with or without bonding or liquidated damages provisions, were

ineffective in protecting their economic interest. The key to protection was to restrict access to trade secrets in the first place (Exs. 27-14, 27-15, 27-16, 27-24, 27-25, 27-29, 27-34). For instance, Daniel Thompson, representing trade associations in the flavor and fragrances industries, commented (Ex. 27-15):

> Liquidated damage clauses or penalty bonds are totally inadequate for a number of reasons. To begin with, bonding is commercially unavailable and legally insufficient as a protection against unconsented disclosures. First, blanket bonds routinely exclude the types of actions which can cause the loss of the valuable secret, e.g. mishandling of the information or a dissemination which cannot be prosecuted as a fraud under state law. (*P. Gordis, Property & Casualty Insurance* (12th ed 1965). Second, a bonding firm is most unlikely to write bonds covering individual union members or ex-employees against passage of the secrets. Third, bonds would not repay the employer/innovator where the union can show unintentional dissemination in any fashion; the secret is lost but the bonding company would probably refuse to pay. (Note, "The Freedom of Nonfree Information", 32 Stanford L. Rev. 339 (1960) Liquidated damages, likewise are easier to permit than they are to collect; few designated representatives have sufficient assets to pay liquidated damages or to post penalty bonds. Under the standard, anyone may be made a designated representative with an unqualified right to records. For those designated representatives that do have assets, for example, labor organizations, difficult problems of proof may well have to be 53319 overcome by the wronged employer before he could receive any relief through a liquidated damages clause. Moreover, the availability of labor organization funds for this purpose is at least uncertain.

> An accused designated representative could defend himself by stating that the employer's competitor independently discovered the trade secret without relying on records wrongfully obtained through the access standard. The burden of proof would be on the wronged employer.
>
> If a labor union entered into a secrecy agreement with a liquidated damages clause and its employee admitted to wrongfully disclosing trade secret information, the union could defend itself by stating that its employee's act was *ultra vires*. The wronged employer would be left without remedy unless he could prove otherwise. These are but a few of the numerous practical and legal problems with the proposal.
>
> Even if all of these problems could be overcome; the net result, a cash award to a wronged employer, could not begin to compensate for the financial loss caused by disclosure of (some of our more popular) trade secrets * * *

For their part, the unions universally object to any authorization of bonding or liquidated damages provisions (Ex. 19-161; Exs. 27-28, 27-36, 27-38, 27-39, 27-41, 27-42, 27-43, 27-44, 27-45; Tr. 900-1, 3145-46). For example, the AFL-CIO, et al. stated (Ex. 180A):

> When employers do agree to disclose chemical identities deemed trade secrets, the proposal permits employers to condition employee, designated representative, and downstream user access upon acceptance of a restrictive confidentiality agreement. Bonding requirements and liquidated damages clauses may be permitted as conditions for access. However, there is no evidence in this rulemaking record showing union or employee abuse of trade secret information which would justify restrictive conditions (Tr. 92, 859, 3522). Rather there is substantial evidence demonstrating that conditioning the

> release of trade secret information on written agreements with bonds or liquidated damages clauses is infeasible. Bonding agencies are reluctant to guarantee against the disclosure of information whose value cannot be assessed (Ex. 27). And not one union or employee representative testified that they would sign a confidentiality agreement which contained a clause for liquidated damages as a condition for receiving trade secret information (Tr. 377, 568, 603, 680, 702, 856, 2474, 3686). Thus the proposed restrictions are, in practical terms, the equivalent of denying workers, their designated representatives and user employers access to chemical identity information.

These comments point out the legal and practical risks both parties face when trade secrets are divulged on a confidential basis. Breach of confidentiality serves no one's interest. Because this is so, it is important that the trade secret holder and the health professional seeking the information enter into explicit agreements which set forth the conditions under which the trade secret is being disclosed and will be maintained. It is also important that each party understand the consequences of failure to live up to the agreement. OSHA has concluded that confidentiality agreements serve a important function in striking the balance between trade secret protection and health need. Short of a total ban on disclosure, limiting access to health professionals who state their need for the information and sign confidentiality agreements assures as much as possible that the necessary information is being entrusted to a minimal number of responsible, identifiable and accountable individuals. Confidentiality agreements impress upon the recipients of this information their obligation to use this information for the stated health purposes and to protect the provider of the information from competitive harm. To this end, the standard explicitly states that the confidentiality agreement may "restrict the use of information to the health purposes

indicated in the written statement of need," and "prohibit disclosure of the information to anyone other than OSHA who has not entered into a similar agreement without the consent of the employer." Overall, these authorized restrictions should effectively deter inadvertent or unauthorized disclosure of trade secrets. As stated by Michelin Tire Company (Ex. 27-16):

> Perhaps the most important feature of any effective confidentiality agreement is a provision prohibiting any redisclosure of the trade secret to any person or organization who has not executed a similar confidentiality agreement. Such a provision is absolutely essential and is totally consistent with the purposes of the access rule in that it: (1) Allows access to exposure records containing trade secrets to all necessary persons; (2) ensures that the employer knows exactly who has had access to its trade secrets at any given point in time and will thereby assist the employer in enforcing his confidentiality agreement if it is breached; (3) ensures that each person who has access to the trade secrets fully realizes his disclosure responsibilities and is thereby deterred from nondisclosure; and (4) greatly reduces the uncontrollable causal redisclosure and dissemination of trade secrets which presently renders the confidentiality agreement provisions of the (records) access standard impotent.

The reference to OSHA disclosure was included to ensure that the confidentiality agreement does not preclude the health professional from disclosing information to the Agency, particularly when the potential harm to employees is great and the holder of the information is not providing proper protection. The standard does require the health professional to inform the holder of the information that OSHA will be receiving it prior to such disclosure. OSHA is required to protect the confidentiality of such trade secrets under Section 15 of the OSH Act.

While the primary function of a confidentiality agreement is to establish the conditions of trade secret disclosure and therefore preclude inadvertent or unauthorized dissemination of the confidential information, it is also important to recognize that, from a legal standpoint, the agreement constitutes a contract that is enforceable in the courts. As such, it may be appropriate that it contain not only provisions relating to the primary duties of the parties, but also provisions relating to remedies in the event of a breach. It is basic contract law that a party wronged by a breach of contract is entitled to actual damages, and that where the injury that will be caused by breach is difficult to estimate, as is the case of trade secrets, a provision liquidating the damages to be paid will be literally enforced if the court is convinced that it is a genuine pre-estimate by the parties of the extent of likely injury. Where such a provision is agreed to, it provides the advantage of greater certainty to both parties. On the other hand, where the stipulated amount is so large as to be out of proportion to the interest to be protected, it will be treated as a penalty or forfeiture and not enforced. Corbin, *Corbin on Contracts*, Ch. 58 (1964).

Accordingly, OSHA has concluded that the authorized confidentiality agreement may include a provision for "appropriate legal remedies in the event of a breach of the agreement, including stipulation of a reasonable pre-estimate of likely damages." This language is designed to permit the kinds of liquidated damages provisions that would be enforced by any court, but not to permit penalty or forfeiture provisions that are inappropriate to a contractual agreement. At the same time, OSHA has decided to explicitly prohibit requirements for the posting of a penalty bond. Unlike liquidated damages, which must approximate actual damages and are payable only in the event of a breach, a bond would require the advance posting of money, is not dependent on the occurrence of any breach, and could easily act as an absolute

barrier to access. Access to trade secret identity information is intended to be mandatory provided certain basic conditions of need and confidentiality are met. It would defeat the occupational health purposes of the 53320 standard if holders of the information were given the freedom to set the terms of access prohibitively high by requiring the posting of penalty bonds.

Finally, OSHA recognizes that, while a confidentiality agreement provides a contractual basis for seeking remedies in the event of a breach, there may well be other non-contractual remedies available in law or equity to the trade secret holder. Milgrim, *Trade Secrets*, §§ 4.01-4.03 (1982). For instance, injunctive relief may be appropriate under certain circumstances, or, depending on the terms of the contract and the intentions of the parties, a tort action may be available in addition to or as an alternative to a contract action. While the measure of damages in tort would not be materially different than that in contract in most cases, there may be differences in terms of such factors as statute of limitations or elements of proof. In addition, punitive damages may be available in tort for willful or malicious disclosure or misappropriation of trade secrets. They may also be available under certain statutes authorizing such damages. Milgrim, *Trade Secrets*, § 7.08 (1982). Thus, to clarify that the confidentiality agreement is not meant to limit the trade secret holder to only contractual remedies if other remedies are available under state law—indeed, a confidentiality agreement is permitted but not required —the standard explicitly states that "nothing in this standard is meant to preclude the parties from pursuing non-contractual remedies to the extent permitted by law."

In this way, the standard assures that chemical identity information which is trade secret is made available to those who need it but is not disclosed to others who may be in a position to use it to the competitive disadvantage of the trade secret holder. Employee protection is thus assured while maintaining the confidentiality of *bona fide* trade secrets.

8. *Effective dates.* In the proposed standard, OSHA staggered the projected effective dates by facility size (i.e. number of employees); whether the hazardous chemical is a pure substance or a mixture; and whether the employer is a chemical manufacturer or user of hazardous chemicals. The purpose of the staggered dates was to allow downstream employers to take advantage of the flow of information generated by chemical manufacturers to comply with the standard. The underlying approach was that larger employers would have to be in compliance first, and thus smaller firms could obtain information from them in time to meet their own compliance dates. This scheme was designed to comply with the Regulatory Flexibility Act, which requires Federal agencies to assess the impact of regulations on small entities, and establish different compliance standards for them where it is feasible, legal and desirable to do so.

As was pointed out by a number of commenters, the proposed scheme did not accomplish this intended effect (see, e.g. Exs. 19-58, 19-62, and 19-219). The primary problem is that small manufacturers may supply larger manufacturers with hazardous chemicals, and in those situations, the larger manufacturers would have to be in compliance with the standard before their smaller supplier was required to give them the necessary information. Small manufacturers may not be benefitted by this scheme as intended, as the U.S. Small Business Administration explained in their written comments (Ex. 19-58):

> Although OSHA attempted to properly analyze the impact of the rule, the fact that supply channels are not a function of size was not thoroughly addressed
> * * *
>
> To the contrary, it is a common phenomenon for small manufacturers to supply substances and/or mixtures to larger manufacturers. We understand that small manufacturers believe a staggered phase-in would not be beneficial to them because either:

a. Large manufacturers would demand hazard information from their small suppliers; or

b. Small manufacturers would supply their larger customers hazard information before OSHA required as a result of other market pressures.*

Various suggestions for alternative time frames were submitted to the record. The majority of those commenting suggested that the time frame be the same for all employers, regardless of the number of employees involved (e.g. Exs. 19-46, 19-65, 19-79, 19-110, 19-147, 19-177, 122, 123, 125, and 180A). As expressed by Phillips Petroleum, Inc. (Ex. 19-177a):

> * * * The number of employees at any workplace has no direct bearing on the number of chemicals in the workplace. The time element will depend upon the number of chemicals to assess and the availability of qualified personnel to collect data, classify hazards, prepare material safety data sheets and develop or adopt a training and information program. Most companies can comply in a shorter period of time. However, all companies should be able to comply within two years.

Other participants suggested different time periods, generally ranging from one to four years (see, for example, Exs. 19-46, 19-62, 19-76, 19-91, 19-111, 19-119, 19-124, and 19-167). No specific justification was presented for any of the time frames suggested.

In the final standard, OSHA has followed the suggestions of the majority of participants who commented and modified the schedule of effective dates. A time period of two years has been established for labels and material safety data sheets to be transmitted downstream, and two and one half years for all employers to be in full compliance with the standard. This will permit downstream employers who use hazardous chemicals to

take advantage of information generated upstream to design and implement their internal hazard communication programs. It will also shorten the proposed time frame for full compliance by one year, and thus employees will receive the full protection of the standard at an earlier date than originally anticipated.

D. *Legal Authority*

Authority for issuance of this standard is found primarily in sections 6(b) and 8(g)(2) of the OSH Act, 29 U.S.C. 655(b) and 657(g)(2). Section 6(b)(5) governs the issuance of occupational safety and health standards dealing with toxic materials or harmful physical agents. Section 3(8) of the Act, 29 U.S.C. 652(8), defines an occupational safety and health standard as:

> (A) standard which requires conditions, or the adoption or use of one or more practices, means, methods, operations, or processes, reasonably necessary or appropriate to provide safe or healthful employment and places of employment.

The Supreme Court has said that section 3(8) applies to all permanent standards promulgated under the Act and requires the Secretary, before issuing any standard, to determine that it is reasonably necessary and appropriate to remedy a significant risk of material health impairment. *Industrial Union Dep't* v. *American Petroleum Institute*, 448 U.S. 607 (1980).

The "significant risk" determination constitutes a finding that, absent the change in practices mandated by the standard, the workplaces in question would be "unsafe" in the sense that workers would be threatened with a significant risk of harm. *Id.* at p. 642. This finding is not unlike the threshold finding that a chemical is toxic or a physical agent is harmful. *Id.* at 643, fn. 48. This finding, however, does not require mathematical precision or anything approaching scientific certainty if

the "best available evidence" does not warrant that degree of proof. *Id.* at *pp. 655.6*; 29 U.S.C. 53321 655(b)(5). Rather, the Agency may necessarily base its findings largely on policy considerations and has considerable leeway with the kinds of assumptions it applies in interpreting the data supporting it. *Id.*

Moreover, under the authority of section 6(b), and specifically section 6(b)(7), OSHA may issue certain kinds of "backstop" requirements that are essentially "information-gathering" in function. These requirements may be imposed at levels of risk below what would be necessary for the setting of exposure limits because they serve the purpose of "keep[ing] a constant check on the validity of the assumptions made in developing the permissible exposure limit, giving it a sound evidentiary base for decreasing the limit if it was initially set too high." *Id.* at p. 658 (footnote omitted). By logical extension, the same kinds of requirements may be imposed even where there are no such limits set if there is substantial evidence to support them, since such information is necessary to see if levels should be set in the first instance.

Further elucidation on the characteristics of a section 6(b) standard has been provided by the United States Court of Appeals for the Fifth Circuit in *Louisiana Chemical Ass'n., et al.* v. *Bingham, et al.*, 657 F. 2d 777 (1981). In that case, the Fifth Circuit concluded that, as a jurisdictional matter, OSHA's records access rule, 29 U.S.C. 1910.20, must be treated as a section 8 regulation, and not a section 6 standard, mainly because the rule: (1) Does not require the employers to make the records in the first place but applies only to records which they already make; and (2) pertains to thousands of substances not even specified as "hazardous." *Id.* at p. 781. This conclusion was further supported by the Court's finding that the records access rule fits neatly within the language and history of section 8, with its

emphasis on enforcement and detection of hazards via recordkeeping. *Id.* at p. 783.

The hazard communication standard stands in contrast on all three counts. First, it affirmatively requires the evaluation of chemical hazards and the development of material safety data sheets, labels, and education and training programs to transmit this information. Second, the core requirements concerning the establishment of hazard communication programs (i.e. data sheets, labels, and education and training) pertain only to "hazardous chemicals." The hazard determination procedures and supporting definitions are designed so that only chemicals for which there is scientific evidence of actual hazards are made the mandatory subject of hazard communication programs. Of course, in fashioning the hazard determination procedures, the Secretary was entitled to rely on conservative scientific assumptions and was not bound to limit the scope of the rule only to those chemicals for which sufficient evidence exists to set exposure limits, since the law and sound public policy recognize the basic distinction between disclosure requirements and more onerous, comprehensive "command and control" requirements. Thirdly, the standard fits neatly within the language and history of Section 6(b)(7) which pertinently states that:

> Any standard promulgated under this subsection shall prescribe the use of labels or other appropriate forms of warning as are necessary to insure that employees are apprised of all hazards to which they are exposed, relevant symptoms and appropriate emergency treatment, and proper conditions and precautions of safe use or exposure * * *

The fact that it is being issued as a generic standard and is stated largely in performance language does not alter its essential character as a 6(b) standard.

Moreover, the practices mandated by the standard—hazard evaluations, written hazard communication pro-

grams, labels and other forms of warning, material safety data sheets, and education and training—are, at bottom, directed not merely at the identification of workplace chemicals, but more significantly at the correction of their hazards as well. This correction will occur largely as a result of employee compliance with instructions on how to protect themselves when exposed to hazardous chemicals that are an integral part of any hazard communication program, as well as by other hazard-reducing strategies adopted by employers (e.g., chemical substitution). And because, as is discussed at greater length elsewhere in this preamble, the record clearly indicates that inadequate communication about serious chemical hazards endangers workers and that the practices required by this standard are necessary or appropriate to the elimination or mitigation of these hazards, the Secretary is hereby able to make the threshold "significant risk" determination that is an essential attribute of all permanent standards.

The Secretary's authority to issue this proposed standard is further supported by the general rulemaking authority granted in section 8(g)(2) of the Act. This section empowers the Secretary "to prescribe such rules and regulations as he may deem necessary to carry out (his) responsibilities under the Act"—in this case as part of, or ancillary to, a section 6(b) standard. The Secretary's responsibilities under the Act are defined largely by its enumerated purposes, which include:

> —Encouraging employers and employees in their efforts to reduce the number of occupational safety and health hazards at their places of employment, and to stimulate employers and employees to institute new and to perfect existing programs for providing safe and healthful working conditions (29 U.S.C. 651(b)(13));
>
> —Building upon advances already made through employee and employer initiative for providing safe

and healthful working conditions (29 U.S.C. 651(b)(4));

—Exploring ways to discover latent diseases, establishing causal connections between diseases and work in environmental conditions * * * (29 U.S.C. 651(b)(6));

—Encouraging joint labor-management efforts to reduce injuries and diseases arising out of employment (29 U.S.C. 651(b)(13);

—Developing innovative methods, techniques, and approaches for dealing with occupational safety and health problems (29 U.S.C. 651(b)(5)); and

—Providing for training programs to increase the number and competence of personnel engaged in the field of occupational safety and health (29 U.S.C. 651(b)(8); 29 U.S.C. 670(c)).

Because the hazard communication standard is reasonably related to these statutory goals, and will also have the effect of enhancing the role that employers, employees and their designated representatives play in the OSHA process by making them better informed about workplace hazards, the Secretary finds that this standard is necessary to carry out his responsibilities under the Act. *Cf. Mourning* v. *Family Publications Service*, 411 U.S. 356 (1973); *Whirlpool Corp.* v. *Marshall*, 445 U.S. 1 (1980); *Louisiana Chemical Ass'n et al.* v. *Bingham, et al.*, 550 F. Supp. 1136 (W.D. La., 1982) (OSHA records access rule upheld as valid section 8(g)(2) regulation). In addition to its status as a section 6(b) standard, therefore, this rule also falls within the broader class of section 8 regulations.

In addition, Section 8(c)(1) of the Act, 29 U.S.C. 657(c)(1), authorizes the Secretary to issue regulations requiring employers to "make, keep and preserve, and make available to the Secretary * * * such records re-

garding his activities relating to this Act as the Secretary * * * (deems) necessary or appropriate for the enforcement of this Act or for developing information regarding the causes and prevention of occupational accidents and illnesses." Thus, specific statutory authority exists 53322 for OSHA's own access to information under this standard.

Certain aspects of the standard merit further discussion regarding the legal basis for the approach taken in this standard. The standard directs its major obligations toward those employers who are in the best position to develop information concerning chemical hazards or who are the primary users of chemicals in industry. To this end, the standard applies directly only to employers in Division D (Manufacturing), SIC Major Groups 20-39. In issuing standards, the Secretary may, under priority-setting discretion given to him in Section 6(g), 29 U.S.C. 655(g), apply the standard only to certain segments of business, thus "(giving) due regard to the urgency of the need for mandatory safety and health standards for particular industries, trades, crafts, occupations, businesses, workplaces or work environments." The preamble discusses elsewhere why the Secretary's decision to direct the standard only towards employers in manufacturing is a rational one based on relevant policy considerations and the evidence in the record before them.

The system of hazard communication established by this standard is also designed to impose the duty of hazard evaluation primarily on the manufacturers who produce hazardous chemicals for distribution in commerce. It requires the disclosure of hazard-related information not only to their own employees involved in the manufacture of chemicals but also to the employers to whom the chemicals are shipped, so that this information will then be communicated to the employees of such employers. Chemical manufacturers are in the best position to develop and disseminate this information not only because

they have greater scientific expertise with respect to the chemicals they produce, but also because they may be the only ones who know the identity of the chemicals in the first place. Likewise, an importer is in the best position to either develop the necessary information or obtain it from foreign chemical manufacturers who ship hazardous chemicals into the United States. A downstream employer cannot reasonably fulfill his obligations to establish an adequate hazard communication program unless the necessary hazard-related information originates with the chemical manufacturer or importer and is passed forward through the distribution system. Thus, requiring chemical manufacturers and importers to be responsible for hazard determinations and to provide their industrial customers with material safety data sheets and labeled containers is essential to carrying out the statutory mandate of prescribing "the use of labels or other appropriate forms of warning as are necessary to insure that employees are apprised of all hazards to which they are exposed * * *" 29 U.S.C. 655(b)(7). *Accord: American Petroleum Institute* v. *OSHA*, 581 F.2d 493 (5th Cir. 1978) (benzene standard vacated on other grounds), aff'd other grounds *sub nom. Industrial Union Dep't., AFL-CIO* v. *American Petroleum Institute*, 448 U.S. 607 (1980):

> Placing the responsibility to warn downstream employees of concealed hazards on those upstream employers who create the hazards and know of the hazards is consistent with the remedial purpose of the Act and is within OSHA's broad authority to prescribe warning labels.

581 F.2d at 411 U.S. 356 (1973); *cf.*, *Mourning* v. *Family Publications Services*, *supra*.

This standard also provides for the degree of trade secret protection which the Agency considers to be consistent with its mandate to promote the health and safety

of employees. As a matter of legal authority, OSHA has previously taken the position that its mandate requires it to balance and accommodate the interest in occupational safety and health with the protection of trade secrets, but that any unavoidable conflict should be decided in favor of the health interest. (See 45 FR 35248-51, Records Access Preamble). This position has been based on: (1) Federal preemption doctrine, which says that state law (i.e., trade secret protection) may be preempted if it burden or conflicts with federal law; (2) the OSHA statute, whose limited trade secret section (Section 15; 29 U.S.C. 664) simply carves out an intragovernmental exception to the Trade Secrets Act, 18 U.S.C. 1905, and does not otherwise directly restrict OSHA's broad rulemaking authority in the are of providing access to toxic substance information; and (3) analogous judicial contexts, where the courts have adopted a balancing approach favorable to the health and safety interest.

In *Louisiana Chemical Ass'n* v. *Bingham*, *supra*, the District Court upheld this approach as a valid exercise of legal authority—one which may, if adopted by rulemaking, be used to authorize the disclosure of trade secrets to non-government personnel under the Trade Secrets Act. *Cf Chrysler Corp. v. Brown*, 441 U.S. 281 (1979). The hazard communication standard strikes a somewhat different balance than the one originally taken in the records access rule in that it permits limiting trade secret disclosure, with appropriate confidentiality protection, only to health professionals providing occupational health services to employees. This new approach is based on a determination that health professionals acting in this capacity are, by profession, qualified to use the information (i.e., chemical identity information) in a manner which best serves the interests of occupational safety and health and may also be expected to scrupulously safeguard the confidentiality of that information, thereby minimizing the potential for competitive harm. Accord-

ingly, it is consistent with the Supreme Court's decision in *Detroit Edison Co.* v. *NLRB*, 440 U.S. 301 (1979) in which the Court held that the National Labor Relations Board abused its remedial discretion when it did not limit union access to confidential test data to a psychologist acting as an intermediary on behalf of the union.

Finally, the fact that this rule is being issued as a § 6(b) occupational safety and health standard carries with it two significant consequences. First, judicial review of the standard lies exclusively in the United States courts of appeals. Section 6(f) of the Act, 29 U.S.C. 655(f); *Louisiana Chemical Ass'n.* v. *Bingham*, *supra*, 657 F. 2d 777.

Secondly, as a standard, it preempts competing state standards which do not meet certain procedural and substantive criteria. Section 18(a) of the Act, 29 U.S.C. 667(a), says that a state is not prevented from asserting jurisdiction over "any occupational safety and health issue with respect to which no standard is in effect under Section 6." Conversely, where OSHA has issued a standard under Section 6, § 18(b), 29 U.S.C. 667(b), requires a state desiring to issue standards relating to the same issue to submit a state plan to OSHA. Section 18(c), 29 U.S.C. 667(c) authorizes the Secretary to approve the submitted state plan only if the state plan provides for standards and a plan for their enforcement which are, *inter alia* "at least as effective in providing safe and healthful employment and places of employment as the standards promulgated under Section 6 which relate to the same issues."

While questions of effectiveness and commonality of issues must be resolved on an *ad hoc* basis, in general the Secretary intends to scrutinize carefully any state law or regulation submitted under an approved state plan which contains any hazard determination or communication requirements which are applicable to chemical manu-

facturers or other employers in SIC Codes 20-39. The 53323 purpose of this review is to assure not only equal or greater effectiveness but also that any additional requirements contemplated by the state do not conflict with or adversely affect the effectiveness of OSHA's standard. Because the hazard communication standard is "applicable to products" in the sense that it permits the distribution and use of hazardous chemicals in commerce only if they are in labeled containers accompanied by material safety data sheets, and because there is a strong policy justification for uniform application throughout the distribution system of a national hazard communication standard, the Secretary intends to approve a state standard only if its "required by compelling local conditions and do[es] not unduly burden interstate commerce." Section 18(c) of the Act; 29 U.S.C. 667(c). If the Secretary does not approve such a standard, the state submitting the plan shall be afforded due notice and the opportunity for a hearing. Section 18(d) of the Act; 29 U.S.C. 667 (d).

III. Regulatory Impact Analysis, Regulatory Flexibility Analysis and Environmental Impact Analysis

The following is a summary of the regulatory impact and regulatory flexibility analyses prepared by OSHA for the final hazard communication standard. Copies of the full text of the document may be ordered from the National Technical Information Services, U.S. Department of Commerce, Springfield, Virginia, 22161, or may be examined and copied in OSHA's Docket Office, Room S6212, U.S. Department of Labor, 200 Constitution Avenue, N.W., Washington, D.C. 20210; (202) 523-7894.

Statement of the Problem

During the 1970's, increased attention focused on chemicals found in the workplace as an important source of hazardous exposures which cause or contribute to chronic

diseases such as heart ailments, kidney damage, sterility, and cancer. Many chronic diseases are characterized by long latency periods of 20-30 years or longer. Often the exact relationship between the intensity of exposure and the risk of disease is not well understood. The problem is exacerbated by the likelihood of multiple exposures. The worker might be exposed to numerous chemicals at a point in time or over a long period of employment. In addition, the exact synergistic effects of these chemicals on health is likewise highly uncertain.

Other chemicals can cause acute damage such as burns, rashes, or even toxic reactions after an immediate high level dose. Still other chemicals contribute to serious accidents on the job such as fires and explosions.

Data indicate that there may be as many as 575,000 chemical products, with hundreds of new chemicals introduced annually. This growth in the number of industrial chemical products can result in a wide variety of effects on health and safety in the workplace.

A large number of workers are exposed to such risks on their job. The National Occupational Hazard Survey (NOHS) indicated that about 8.5 million workers were exposed to chemical hazards in manufacturing during 1972-74 (Ex. 16-7). Because the manufacturing labor force grew at a 0.7 percent annual rate during the interim years 1973-82, the number of exposed workers in manufacturing may now total about 9 million workers. The NOHS data also indicate that over 280 million exposures to chemical hazards occurred in the manufacturing sector during 1972-74. Using the same labor force growth rate and assuming a 3 percent annual growth in the average number of hazards to which each worker was exposed, chemical exposures in manufacturing may total 388 million in 1982.

Efficient use of resources in our society requires that all participants have complete and accurate knowledge

of economic and technological data. Rarely, however, is this requirement fully satisfied. Decisionmakers are often ignorant of the attributes of the good or service. Hence, the participants may not be apprised of the longer term consequences of the exchange.

The economic justification for a regulatory action in the case of chemical hazards is contingent on the degree of market failure. If the problem is an intermittent one, which is quickly rectified by market incentives, then the economic justification for regulatory intervention may be insufficient. This is not, however, the case.

The testimony presented to the public record on the March 19, 1982, OSHA proposal indicates that the market failure problem is extensive (see, for example, Exs. 19-61, 19-109, 94, 103 C, 103 R, 122, 178, L-16, and Tr. 98-101, 1308-9, 1811, 2932). This conclusion was perhaps best summarized by the Boeing Company (Ex. 9-109):

> Marketplace pressure, as suggested in the preamble, is not an acceptable means by which to ensure that suppliers will pass on the hazard warning information (specifically, Material Safety Data Sheets (MSDS's)) to users. This suggestion will only reinforce the current voluntary system which already relies on pressure from "the market," or users pressuring the suppliers and manufacturers for information. It is a cumbersome and ineffective system which we hope will not be sanctioned by OSHA as an old idea under the guise of new terminology.

Many of the potential hazards associated with chemical products have not been communicated to workers, or in many cases, to employers. Because of the inadequacy of chemical information, the employer cannot or does not take into account the potential impact his or her decision concerning the use of the chemical product may have on others. Employees pay for the inadvertent or advertent

errors in judgment by an employer through impaired health, injury, or death. Other members of society pay through a reduction in production and community welfare. The failure in the market for hazard information in turn causes a misallocation of resources in other markets. For example, the employee is unable to match his or her risk preferences with the risk characteristics of the job.

Furthermore, the current remedies may magnify the information problem. The tort liability system on the whole provides disincentives for employers to provide information on the relative hazards of chemical substances. Tort liability does represent one form of redress for employees with injuries and illnesses from exposure to chemicals, but Worker's Compensation laws generally bar employees from suing their own employers. A lawsuit against a chemical manufacturer or supplier would provide compensation for risk-averse employers and employees and would encourage upstream distributors of chemical products to include potential accident costs in their decision-making process. The absence of correct information concerning the hazard posed by the chemical substance or mixture, however, will influence the decision to initiate a lawsuit. If the probability of a successful outcome of a lawsuit is relatively low, then the individual will be inclined to take a conservative stance and not litigate. It has been demonstrated that when the population-at-risk is more risk-averse, conservative behavior decision is the norm. Hence, the employer's incentive to provide a more healthful and safer work environment arising from the probability of litigation is likely to be muted. A similar situation results when the transactions costs associated with a lawsuit are high. The potential effectiveness of legal remedies is limited by the fact that workers often cannot afford to forego potential payments while awaiting settlement, especially if the probability of winning the lawsuit is relatively low.

They may not be able to 53324 afford the costly legal fees associated with protracted litigation.

Likewise, the Worker's Compensation system with its dual tests of workplace connection and employer responsibility provides disincentives to the provision of accurate information. Available evidence from a Department of Labor (DOL) study indicates that many occupational diseases are not compensated through the Worker's Compensation system and hence are "externalized" to society (Ex. 16-38).

The objective of a regulatory action by OSHA must be to prevent injury and illness due to mishandling of hazardous chemicals by employers and employees. OSHA could propose to achieve this objective by a case-by-case regulation of industrial chemicals. The dynamic nature of the production of health and safety information for existing and future chemical products does not, however, provide the environment for effective, efficient case-by-case regulation. The testimony of a representative of the Ford Motor Company provides a statement of the problem (Tr. 593).

> It's a dynamic happening out there, both in the hazard and toxicity sense of chemicals being made or changed or switched * * * there may not be any eyebrows raised today, but, you know, we switch chemicals a year from now—pick five that you think might be, you know, a problem a year from now that aren't really raising any eyebrows now because the tox[icity] data isn't in or hasn't been found.

The nature of the market failure problem together with the large variety of potential hazards suggests the value of a different approach—one which would provide accurate, continuously updated information to employees and employers on the hazards of chemicals in their work environment. In turn, it is not unreasonable to assume that if employers and employees are provided with meaningful risk information, they will take the appropriate

protective action. One representative from Mobil Oil Corporation testified that (Ex. 164 B):

> There should be very noticeable behavior changes and actions on the part of managers and employees which can be directly attributed to a chemical handling information system. The first, will be increased discussion and concern about the whole area of exposure to chemicals. There will also be inquiries about materials which were not included. Protective equipment will become of greater concern on two accounts: Employees will wear it more willingly in most cases and supervisors will enforce its use with more confidence. Management and employees will both review current work methods to minimize exposure. Some marginally safe tasks may be completely eliminated, either by new manual methods of working or through engineering improvements. If management encourages it, many creative improvements which are safer and more cost effective may be expected. A chemical handling information system which includes concern for not only the hazards of materials but also the methods of handling is not just another safety program. A well designed approach which communicates well and invites employee participation is a strong tool for organization change. Although a great deal of effort is involved in developing the system, the benefits more than justify the cost.

Improved hazard recognition will encourage market-oriented responses such as increased precautions when handling hazardous chemicals and substitution of less hazardous products. These responses will translate into reduced injury and illness incidences from exposures to industrial chemicals. The benefits of such a regulatory action will not be confined to substances that are not currently regulated by OSHA as indicated by the following testimony (Tr. 97-8):

For example, I recently had occasion to treat a gentleman who was an automobile body mechanic who had developed carcinoma of the larynx. A question was raised as to whether or not there was an association between the materials with which he worked and the occurrence of a carcinoma of the larynx. This was particularly relevant in this gentleman's case becasue he had never been a smoker. After careful investigation, we learned that many of the automobile putties which were used over the last 20 years contained large amounts of asbestos. This dust was very likely involved in this gentleman's carcinoma of the larynx. He had no awareness of the presence of asbestos in the material at any time because the product label never listed it as an ingredient of the putty. This lack of information is often the fault of the employer, but more often than not the downstream employer does not have the information to pass along to the employee. Neither the product label nor the Material Safety Data Sheets currently disseminated by many manufacturers contains adequate toxic substances information for the development of an individual or company-wide materials health and safety program. This failure of labeling and of Material Safety Data Sheets is at the root of the current failure in hazard communications. Even those manufacturers and employers who have complied with various voluntary and required labeling protocols usually stress only the immediate, acute hazards. They do not stress such long-term or potential problems such as chronic pulmonary disease, chronic renal disease, allergies, cancer, mustagenesis, or birth defects which may result from exposure to to certain materials.

Several state and local right-to-know laws have been prescribed to deal with this market failure problem. The coverage and requirements of these laws, however, are

consistnt only in their inconsistency. The consequent cost and ineffectiveness of this decentralized effort has been well-documented in the public record as the following statements indicate:

> Compliance with separate differing pieces of legislation is unduly burdensome and a waste of scarce safety and health resources. Unfortunately, it is the employee who ultimately suffers from these potential non-uniform and possibly even conflicting requirements because the employer will be required to allocate a disproportionate amount of resources to comply, in form, with the multitude of disparities in worker right-to-know rules or laws. (American Iron and Steel Institute, Tr. 2023).

> Our experience with differing labeling, material safety data sheet distribution, employee training and customer communications required by the several states and localities which have adopted right-to-know ordinances or statutes has been brief but educational. We have found that the varying requirements are an increased burden. Each such state or jurisdiction essentially requires special handling with respect to advice on compliance procedures for shipment and instructions to distributors and salesmen. Such special handling is inefficient and costly. We urge the Occupational Safety and Health Administration (OSHA) to carefully consider this cost impact on interstate commerce with respect to any changes to the hazard communication standard that may be proposed by a State. Therefore, DuPont believes an appropriate federal rule that establishes a standard is timely and necessary. The concerns of the chemical industry with variable and cost-ineffective state regulations will not be alleviated unless OSHA utilizes its preemption authority as provided in the Act. (DuPont, Ex. 19-57).

> As a multi-state employer, U.S. Steel is potentially facing the administrative and economic nightmare of complying with fifty different state statutes and several hundred local ordinances on hazard communication. This potential morass is exacerbated by the realization that each of these statutes differ in basic as well as particular requests. Thus, the fundamental reason for legislating a hazard communication program, i.e., worker safety and health, is lost in the shuffle of attempting to comply (in form) with the multitude of hazard communication regulations (U.S. Steel, Ex. 19-125).

Evolution of the OSHA Standard
January 16, 1981 Proposal

On January 16, 1981, OSHA published a Notice of Proposed Rulemaking to address this market failure problem (Ex. 10). This proposal was subsequently withdrawn to allow for careful review of its regulatory provisions in accordance with Executive Order 12291 on improving regulatory management. The January proposal included the following key features: (1) Coverage of all manufacturing industries and importers 53325 and repackagers of chemical products and virtually all containers including pipes and support systems such as pumps and valves; (2) highly specific search and evaluation procedures required for hazard evaluation by all manufacturers; (3) detailed labeling of chemical products with no adjustments for trade secrets; (4) Material Safety Data Sheets (MSDSs) for hazardous chemicals to be filed in a central location if available; (5) certification that a particular chemical product does not pose a hazard where applicable; (6) extensive recordkeeping on hazard search and evaluation procedures to be kept for 3 years; and (7) a phased-in compliance period of approximately 2 years. These components are summarized in Table 3.

Serious concerns were raised regarding the excessive costs and paperwork burdens that would be imposed by the January proposal. The initial (startup) cost of the January proposal, as shown in Table 4 was estimated to be between $2.6 and $3 billion depending on the amount of testing conducted to meet the certification requirement. The total annual cost of the January proposal was expected to approach about $1.254 billion. The total present value cost at a 10-percent discount rate amounted to about $22.864 billion or more over a 40-year period. Even these cost figures were somewhat understated because they did not include the costs of labeling pipes outside the chemical and petroleum manufacturing industries. In particular, the required labeling of pipes and support systems would have proven very costly with an initial cost estimated at $1.727 billion or between 58 and 66 percent (depending on the testing assumption for certification) of the total initial cost of the January proposal.

A related issue involved the "specification" orientation of the January proposal with its highly detailed set of required compliance activities. Particular concern centered on the specific search and evaluation procedures established to determine the chemical hazards, including search and evaluation of all relevant scientific literature for certain chemicals, and documentation in cases where the chemical posed no hazard. In addition, the labeling requirements were extensive, calling for chemical names, common names, Chemical Abstract Service (CAS) numbers for all ingredients present in concentrations of 0.1 percent or greater, and hazard warnings which were specified in an appendix. These detailed requirements did not recognize the flexibility necessary to accommodate the diversity among substances, different manufacturing industries, workplaces, process types, and other characteristics relevant to controlling workplace risks. Such detailed labels were clearly not cost-effective, because they

did not accommodate current industry labeling practices, thereby requiring extensive redesign and modification of most existing labels.

Another issue involved the absence of an exemption for trade secrets. The January proposal required the provision of all ingredient information, thus making no allowance for trade secrets, except for the allowance for deletion of unpublished information from the hazard evaluation filed.

In addition, many provisions appeared to be redundant. For example, the information to be provided by an information sheet, if available, was essentially identical to the label.

Finally, OSHA had serious questions regarding the overall effectiveness of the January proposal in light of its focus on *identification* of chemicals rather than on *communication* of the chemical hazards to employees and employers. No education and training requirements were provided to instruct employers and employees on the hazards of chemical and on appropriate precautionary measures. And finally, the required certification of "no hazard" could have easily directed scarce testing resource away from substances with the greatest hazard potential because of employer concern over the financial liability ramifications. As a result, it is doubtful that reliance on extensive labeling would have accomplished the goal of informing workers of chemical hazards and reducing the risk of exposure in an effective manner.

March 19, 1982 Proposal

OSHA carefully reviewed the January 1981 proposal and alternatives in light of these concerns. The objective of the review was to improve the cost-effectiveness of the information approach to the control of chemical hazards in the workplace. In March 1982 OSHA published a revised proposal (Ex. 15).

The March proposal was oriented toward providing hazard information to workers and employers, was largely performance-oriented, substantially reduced the paperwork burden of employers, and eliminated unnecessary regulatory requirements. As a result, the costs of the current proposed hazard communication standard were substantially reduced over those estimated for the January proposal. The total initial cost of the January proposal was estimated at about $2.6 billion, or $185 per employee. It was noted that an assumption of more rigorous testing in response to the certifications of no hazard could raise this cost as high as $3 billion, or $215 per employee. OSHA estimated that the March proposal would reduce the initial cost by 80-90 percent, down to approximately $591.44 million, or $42 per employee as presented in Table 4 (Ex. 17). The annual cost of the March proposal was also substantially lower—$158.92 million, or only $11 per employee.[1] By contrast, the estimate of the January proposal was about $1.254 billion or more, or $89 per employee. Finally, the estimated total present value of the cost of the March 1982 proposal over a 40-year period using a 10-percent discount rate was $3.368 billion compared to $22.864 billion or more projected for the January 1981 proposal.

The March proposal did not require labels on pipes and support systems. This change alone eliminated almost 58-67 percent of the initial compliance cost contemplated in the January proposal. The exemption of pipes and support systems from labeling requirements would have lowered the annual costs by an even larger percentage, saving 70 percent of the annual cost of the January proposal. In part, these high costs stemmed from the ex-

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[1] The cost per employee represents an average for all establishments in the manufacturing sector. Cost per employee for each respective industry and for each establishment size category is presented in the Regulatory Impact Analysis.

pected need to relabel, one-half of the pipes and support systems annually.

As part of the approach of effective hazard communication, the March 1982 proposal also included an education and training provision (but left the specific content and format up to the employer) to inform employees about hazards and protective clothing and equipment. The education and training provision also required employers to instruct employees on the precautionary measures to take when handling hazardous substances and appropriate responses should exposures occur. This provision would have resulted in some increase in costs over the January proposal. It was expected that the education and training would, however, significantly enhance the effectiveness of the program.

In contrast to the January proposal, the March proposal was laregly "performance-oriented." As noted above, both the labeling and education and training requirements were performance-oriented to allow employers to take advantage of a wide 53326 variety of compliance approaches tailored to their particular industries and work environments. Similarly, the hazard evaluation procedures were made substantially more flexible relative to the January Proposal. The evaluation was to be based on scientifically well-established studies and thus limited to known hazards of a chemical. Also, a list of references and data sources was provided merely as a guide rather than as a required procedure for this evaluation. If a chemical was determined to pose no hazard, no certification or other compliance activities would have been required for the chemical.

The March 1982 proposal added some specific information requirements for the data sheets filed in a central location for hazardous chemicals. The MSDS information included chemical names, common names, and CAS numbers for ingredients present in specified concentra-

tions; physical hazards and/or known acute and chronic health effects; routes of entry; precautions for safe handling and use; effective work practices and personal protective devices; emergency and first-aid procedures; and date of preparation. This information was viewed as the minimum necessary to ensure an effective hazard communication standard. The chemical identifier on the label provided a link between a simple hazard warning on the label and appropriate precautionary measures provided on the MSDS. Under the March OSHA proposal, the MSDS was the only source of detailed information on the known health and safety effects associated with specific chemicals and appropriate precautions and emergency procedures. For this reason, the chemical manufacturer was required to develop an MSDS if one was not currently available for hazardous chemicals and include it with first shipments. Viewed from another perspective, these small cost increases would be cost-effective in supplying hazard information when compared to the substantially higher costs of providing the detailed information on each and every container as required by the January proposal. The extra $18.19 million initial cost of the current MSDS provision compares quite favorably (and provides more information) to the additional $395.94 million cost for extensive label provided in the January proposal. Likewise, extensive labels would have added $281.07 million to the annual cost of the limited label requirement in the current proposal, while the MSDS provision in the March proposal resulted in only a $1.35 million increase.

The March proposal provided for a trade secret exemption either through use of generic names to mask ingredients or through confidentiality agreements with industrial customers. While there are no cost estimates on the effect of the proposed change, the positive impact on commerce was expected to be substantial.

Final OSHA Standard Components

OSHA evaluated the expected cost-effectiveness of the January 1981 and March 1982 proposals as well as other approaches to hazard communication. The evaluation of the cost-effectiveness of a hazard communication program must be based on the results of the "package" as a whole, not merely a sum of the expected results of the separate ingredients. Thus, the following discussion relies on the March 1982 proposal as the baseline "package."

The March 1982 proposal covered employees in the manufacturing sector (SIC 20-39). During the course of the proceeding, OSHA reevaluated this scope. Evidence indicates that employees in the manufacturing sector are at higher risk of harmful exposure to chemicals relative to other sectors (Ex. 17). Alternatively, the standard could be applied selectively to different industries within the manufacturing sector. This selection of industries would, however, introduce significant incentives to shift chemical production and use to exempted industries, since multi-product firms and vertically integrated firms are not accurately captured within the conventional SIC system. OSHA has included in the final standard a requirement for distributors and importers to pass on the MSDS and maintain the container labels for shipments destined for an employer in manufacturing. OSHA has also included a requirement that employees in laboratories be apprised of the hazards of the chemical products used in their respective workplaces.

OSHA also received much comment on the advantages and disadvantages of a performance approach as opposed to a specification approach to a hazard communication standard (Exs. 19-43, 19-44, 19-46, 19-50, 19-54, 19-57, 19-62, 19-81, 19-88, 19-91, 19-96, 19-115, 19-116, 19-140, 19-146, 19-147, 19-160, 19-188, 19-201, 19-204, 19-209). The wide diversity of production processes and work en-

vironments within and across industries in the manufacturing sector, however, precludes the promulgation of a cost-effective specification standard. The rapidly changing nature of the industrial production processes and the production of hazard information would quickly render a specification standard obsolete. All participants when questioned about the hazard determination process indicated that a significant amount of professional subjective judgment must be included in any hazard evaluation. Therefore, a completely specified weighing procedure for the hazard evaluation would suggest certainty where certainty does not exist. OSHA has, however, included selected lists of chemicals that have been evaluated and found to be hazardous to serve as a floor for the coverage.

OSHA has also included a requirement for the employer to develop a compliance plan. The plan would merely document the hazard determination procedures and the methods use to inform employees of the potential hazards associated with non-routine tasks.

The label in the March 1982 proposal was to serve as the alert mechanism to supervisors and employees about the presence of chemical hazards in his or her immediate work area. The content of the label was limited to hazard warning(s), a chemical identifier to serve as the link to the MSDS, and the name, address and telephone number of the chemical manufacturer. An alternative approach to this limited label would be an extensive label which would include the chemical and common names, CAS numbers, and hazard warnings for all ingredients or all ingredients present above some cutoff defined in terms of percent concentration. Several problems with the extensive labeling approach, however, preclude its adoption. First, the objective of the standard is to communicate to employees and supervisors the potential acute and chronic hazards associated with chemical products. Evidence on the expected cost-effectiveness of the extensive label approach in achieving this objective was not

presented to the public record. The limited label approach in combination with a detailed MSDS as required by the March proposed standard is expected to be at least as effective and, in light of the potential for information overload with the extensive label, perhaps more effective than the extensive label alternative. In addition, the limited approach would involve a cost savings of 50 percent. Second, the requirement for an extensive label would ignore proven industry practices. Changes in these practices to comply with a 53327 requirement for extensive labeling of containers would involve significant costs with no gains in terms of the effectiveness of the overall hazard communication program.

Several participants in the public hearing questioned the need for implant labeling of containers. Again, the role of the label is to serve as the alert mechanism. Evidence was not presented to the public record to support other means of communication in all cases. OSHA has, however, acknowledged that labeling of reactor vessels and the like may be cumbersome and ultimately counterproductive. The final standard would therefore allow the employer the option in these cases to label the container or to provide batch tickets, production sheets, etc. as long as the necessary information is conveyed. The cost savings for this change cannot be determined. It is expected to be significant, especially for small entities.

The March 1982 proposal did not require the labeling of pipes and pipe support systems, although comment on this provision was requested in the public hearings. OSHA did include a direct requirement in the March proposal for employers to inform employees about the potential hazards associated with non-routine tasks as the cost-effective approach to this particular problem. Testimony presented during the public hearing did not refute the conclusion that labels on pipes and pipe support systems are not the most cost-effective means of communicating hazards and precautions to take.

Many participants requested an exemption from the labeling requirement if a container label was already required by another Federal agency. To avoid any unnecessary duplication of effort and confusion that may be created by multiple labels, OSHA has included in the final standard a labeling exemption for certain substances (e.g. pesticides) required to be labeled by another Federal agency. The reduction in the cost of compliance as a consequence of this change could not be determined. It is expected to be significant, however, especially for small entities.

In the document accompanying the March 1982 proposal, OSHA tentatively concluded that the expected cost of providing MSDSs with first shipment was less than the expected cost of providing them to industrial users in manufacturing "upon request." The expected cost savings stemmed from the avoidance of requests from industrial users. Testimony submitted by chemical producers suggested that the relative cost of the "upon request" approach was lower than the provision of MSDS's with first shipment (see, for example, Exs. 19-43, 19-46, 19-59, 19-72, 19-79, 19-84, 19-85, 19-91, 19-94, 19-111, 19-115, 19-116, 19-117, 19-119, 19-124, 19-141, 19-147, 19-152, 19-164, 19-169, 19-177, 19-181, 19-205, and 19-213). Two major problems arise with this testimony. First the cost estimates failed to include the cost of requesting MSDS's for user employers in the manufacturing sector. A more appropriate cost evaluation must include the full social cost of the alternatives, not merely the cost to a particular segment. As indicated by several industry representatives and by the OSHA cost estimates, the additional cost of multiple requests that would be required with the "upon request" approach is significant. Second, the cost savings that chemical producers would presumably enjoy with the "upon request" approach relative to provision with first shipment was due to the perceived avoidance of the need to maintain customer lists. These participants then indicated in further testi-

mony that they do currently maintain lists in order to provide their customers with updated chemical information. This inconsistency was not resolved in the testimony submitted to the public record.

Education and training in the March 1982 proposal was included to ensure the effectiveness of the standard. The format of the education and training program was left to the discretion of the employer. OSHA argued that the performance approach was necessary to allow for the diversity of production environments that characterize the manufacturing sector. The need for education and training was endorsed in the public hearing as a critical component of an OSHA standard.

In sum, OSHA's final standard is designed to support an effective hazard communication system while minimizing its cost impact on employers. The labels are limited to the hazard warning and an identifier to provide a link to the MSDS's, thus improving the effectiveness of the label and lowering the costs of providing the labels. The MSDS complements the label by providing more detailed ingredient and hazard information; all of this would be available in a central file as opposed to on every container. The education and training requirement encourages the employer and employee to use the information provided by the MSDS, thereby increasing the hazard awareness of employees and supervisory personnel. The standard provisions are largely performance-oriented and unnecessary paperwork has been eliminated.

Summary Costs of the Standard

The initial cost of the final OSHA standard does not differ significantly from the cost of the March 1982 proposal. The initial cost as presented in Table 3 is $603.926 million or $43 per employee. The total annual cost is $158.87 million or $11 per employee. The present value of the cost is $3.374 billion using a 10 percent discount rate. A complete discussion of the methodology used in

the cost evaluation is provided in Chapter IV of the Regulatory Impact and Regulatory Flexibility Analysis.

TABLE 3.—A COST COMPARISON OF THE JANUARY 1981 AND MARCH 1982 PROPOSALS AND THE FINAL STANDARD

Cost	January 1981 proposal	March 1982 proposal [1]	Final standard
Initial cost:			
Total (millions)	$2,600,000	$ 591,440	$ 603,926
Average per employee [2]	185.00	42.00	43.00
Total annual:			
Total (millions)	1,254,000	158,490	158,870
Average per employee [2]	89.00	11.00	11.00
Total present value (40-year period; millions) [3]	22,864.00	3,368,000	3,374,000

[1] The estimates of the cost of the March 1982 proposal have been revised as necessary to reflect the testimony in the public record.

[2] The cost per employee represents an average for all manufacturing establishments. Hence, it is not a reflection of the average cost for a particular industry or establishment.

[3] The discount rate is 10 percent. The growth rates vary for each compliance activity. These are outlined in Chapter III.

Source: U.S. Department of Labor, Occupational Safety and Health Administration, Office of Regulatory Analysis.

Summary of Benefits of the Standard

General Scope. The purpose of the hazard communication standard differs substantially from other OSHA regulations. Rather than directly control exposure levels in the workplace, it is designed to enhance employer and employee awareness of the safety and health hazards associated with chemical substances. In turn, this hazard recognition produces market-oriented responses by employers and employees that translate into lower incidences of chemically-related injury and illness on the job. The standard will also provide benefits from the avoidance of

multiple and redundant searches for information on chemical ingredients and hazards that are incurred by industrial users. Finally, the promulgation of a uniform, Federal standard will reduce the cost of compliance with the increasing number of state and local right-to-know laws. This section highlights these expected benefits which are described in greater detail in Chapter III of the Regulatory Impact and Regulatory Flexibility Analysis.

53328 *Reduction in the Incidence of Chemical Source Injury and Illness.* Most importantly, the standard will increase employee awareness of the potential health and safety risks associated with industrial chemicals. This should result in increased worker use of personal protective devices, improved work practices, and other precautionary measures when handling hazardous substances. Improved hazard communication should also result in early job transfers and treatment of chronic disease and lowering of future health care costs.

Similarly the standard will provide employers with improved information on the health and safety hazards of various chemical products as part of their investment and production process decisions. This knowledge should result in more safety-enhancing investments—in new control technology process redesign and, perhaps most importantly, in product substitution. The latter is often preferable because it substantially eliminates the hazard without extensive control devices. Improved information among supervisory personnel of the necessary precautions should result in proper day-to-day handling of hazardous substances.

In addition to the health effects implications, there are other expected efficiency improvements as well. In a properly functioning labor market improved information should lead to better matches between the risk preferences of workers and true job risks (and to some extent rela-

tive risks to the firm), thus improving labor market allocation. Employers would also benefit from lower production costs as a result of gains in worker and equipment productivity, reduced worker absenteeism and turnover, and over the long run, lower Worker's Compensation costs.

Finally, society should benefit from a reduction in occupational injury and illness costs currently externalized by firms. These include transfer payments to disabled individuals and their families, such as Social Security disability benefits and public assistance; health care costs not paid by the individual or company such as Medicare and Medicaid; and higher administrative costs of related government programs.

One method of estimating the benefits from a reduction in the incidence of injury and illness due to chemical exposure is the human capital approach. This includes an evaluation of the: (1) Reductions in lost earnings and medical expenses for various categories of chemical source illnesses and injuries as well as (2) lowered turnover costs; and (3) property losses from chemical fires. The injury and illness categories include non lost workday and first-aid cases; lost workday cases, permanent disease disabilities; and cancers related to industrial chemical sources.

Under the methodology used in this study, the current number of cases associated with each category were estimated together with the projected reduction in these cases as a result of the proposed standard over a 40 year period (the period necessary for complete turnover of the current workforce). For example, the rate of chemical source lost workday injuries is expected to decrease by 1 percent per year for 20 years, while cancer cases decline only 2 percent beginning in the 10th year to account for the long latency periods associated with carcinogenesis. The expected reductions in each year were

then multiplied by an appropriate average economic cost measure (e.g., average number of workdays lost per lost workday injury converted into monetary terms through average manufacturing wages or average medical expenses per lost workday injury). Finally all benefits were discounted to the present using a 10-percent discount rate to facilitate the necessary benefit comparisons.

It is not possible with available data to precisely measure even the earnings and medical losses resulting from workplace exposure to chemical substances. In fact, some cost components cannot be measured at all—i.e., the suffering that invariably accompanies a disabling disease. Others can be measured only imperfectly. For example, while the current number of lost workday injuries due to chemical sources can be reliably estimated from Bureau of Labor Statistics (BLS) data taken from Worker's Compensation initial reports and extrapolated to national incidence rates, this data source seriously underreports occupational illness cases.

Studies suggest that occupational illnesses may be underreported by as much as a factor of 50 because of variables such as latency periods which obscure the connection between occupational exposures and the onset of disability (Ex. 16-35). (See Chapter III of the Regulatory Impact Analysis for a more detailed discussion of these studies and the factors affecting this underreporting bias.) It was therefore necessary to adjust the chemical source illness data to account for this underreporting. Likewise, there is considerable scientific controversy over the specific fraction of cancers associated with occupational exposure to chemicals. Estimates of occupational cancers range from 1 to 5 percent of total U.S. cancers, all the way up to 40 percent. Unfortunately, all these studies suffer from various methodological limitations. In view of these and because of the multiple causal agents which impact on carcinogenicity,

OSHA has used an estimate of 5 percent of all cancers as work-related. It should be noted that this 5 percent is further adjusted to account for the percent of work-related cancers in manufacturing to yield an estimate of 2.5 percent of all cancers as work-related in manufacturing. Thus, in the 10th year, using the methodology outlined previously, the expected reduction in the social cost of work-related cancers is 0.05 percent. At equilibrium in the 20th year, using this methodology, the expected reduction in the social costs due to cancer illness is 0.5 percent.

A second source of difficulty involves assessing the likely risk reduction benefits resulting from improved flows of information as distinct from measuring the benefits of lowered exposures. With current information it is simply not possible to estimate precisely the impacts on risk. Several studies have reported significant changes in various indicators of health improvement as a consequence of implementation of some component of a hazard communication program. (Exs. 153, 155, 160H, L-8, Tr. 3709). (A full discussion of these studies is presented in Chapter III of the Regulatory Impact Analysis.) The patterns of likely risk reduction assumed by OSHA are constructed based on best available evidence of the likely effects.

All of the assumptions and possible sources of data error have been carefully analyzed in terms of their influence on the benefit estimates. Chapter III of the Regulatory Impact Analysis describes the benefit estimation procedures used in this study and data limitations in greater detail.

As shown in Table 4, the largest category of benefits attributed to a reduction in chemical source injuries and illnesses comes from a reduction in the social costs of cancer illness. Using the methodology outlined previously, the undiscounted production benefits from a reduction in

cancer illnesses are estimated to be zero for the first 10 years to account for the latency. In the 40th year, the expected undiscounted benefits are estimated to be $808.68 million from increased production and $306.22 million from medical cost savings. Using a 10 percent discount rate, the present value of the benefits for a 40-year period is estimated to be $1047.5 million from increased 53329 production and $393.3 million from medical cost savings.

TABLE 4.—SUMMARY OF QUANTIFIED BENEFITS
[Millions 1982]

Source	Undiscounted			Discounted for 40-year period [1]
	1st year	20th year	40th year	
Non-Lost Workday Cases				
Production lost	$ 0.030	$ 1.360	$ 3.600	$ 5.660
Medical cost	0.020	1.000	2.800	4.200
Lost Workday Cases				
Production lost	0.720	30.600	81.400	147.200
Medical cost	0.130	4.533	12.000	25.490
Disabling Illness				
Production lost	1.410	70.170	189.220	301.420
Medical cost	0.004	0.199	0.536	0.726
Cancer Illness				
Production lost		305.144	808.680	1,047.500
Medical cost		115.440	306.220	393.200
Turnover cost	0.070	4.060	10.780	16.400
Chemical fire	1.000	1.800	3.300	13.700
Reduced search costs	211.971	381.066	691.445	3,092.445
Uniform standard	74.800	135.410	244.580	1,093.880
Total	290.155	1,050.782	2,354.561	6,141.821

[1] The discount rate is 10 percent.

Source: U.S. Department of Labor, Occupational Safety and Health Administration, Office of Regulatory Analysis.

The second largest category of benefits is associated with a reduction in the incidence of disabling illnesses caused by exposure to toxic chemicals in the work environment. The undiscounted benefits in the 1st year are expected to be $1.414 million as presented in Table 4. Using the "1 percent" pattern, these benefits will increase such that the undiscounted benefits in the 40th year are estimated to be $189.756 million. The present value of the cost savings is expected to be $302.146 million for a 40-year period.

Similarly, for chemically induced injuries or illnesses involving the loss of one or more workdays, Table 4 shows the undiscounted production benefits from a reduction in lost workdays to be $0.72 million in the 1st year and $81.4 million in the 40th year, with a present discounted value of $147.2 million for a 40-year period. The corresponding benefits from expected reduction in medical payments amount to $0.13 million in the 1st year and $12 million in the 40th year with a present discounted value of $25.49 million.

The other estimated benefit categories include reductions in non-lost workday injury and illness cases, turnover costs, and property cost due to chemical fires. The present discounted values of these benefits over the 40-year period are estimated at $9.86 million, $16.4 million, and $13.7 million respectively.

While these various estimates are clearly not exact, they do provide a reasonable order of magnitude of the likely beneficial impact of the proposed hazard communication standard. Moreover, they do not incorporate intangible costs important to the individual and associated with premature death, pain, suffering, and family bereavement. Nor do the estimates include firm-based costs, and productivity gains. Indeed, as noted above, there is not even a complete accounting of the medical and wage lost costs. Finally, changing some of the key assumptions re-

garding the extent of health and safety improvements and occupational cancer incidence will not alter the basic conclusion that the proposed standard constitutes an impressive reduction in societal costs.

Reduction in Search Costs

Because of inadequate documentation provided with purchased chemical products, many user employers and employees have incurred substantial costs of searching for the necessary information. Several users of chemical products in the manufacturing sector presented testimony during the public hearing on the resource cost of searching for chemical information. Using these submitted estimates of cost currently incurred, the expected total annual cost of searches for chemical information by employer and employee groups has been determined. The OSHA standard will require the provision of complete chemical information to all manufacturing employers and employees. Thus, the cost associated with the redundant searches will be eliminated. As presented in Table 4, the undiscounted benefits in the 1st year are estimated to be $211.971 million. The undiscounted benefits in the 40th year are expected to be $691.445 million. The present value of the benefits using a 10 percent discount rate is expected to be $3,092.445 million. These benefits are likely to be underestimated since the potential savings in search costs by industrial users outside of manufacturing have not been included. A full discussion of the methodology and assumptions used to derive these estimates is available in Chapter III of the Regulatory Impact Analysis.

Reduction in the Cost Compliance With State and Local Laws

The promulgation of a cost-effective federal standard is likely to reduce the cost of complying with the various state and local right-to-know laws. OSHA and several industry representatives have evaluated the expected addi-

tional cost of complying with the proposed state and local right-to-know laws. The estimate on methodology is discussed fully in Chapter III of the Regulatory Impact Analysis. The expected undiscounted cost savings *at minimum* using the parameter estimates provided by industry representatives or the estimates presented by OSHA are expected to be $74.8 million in the 1st year and $244.58 million in the 40th year. The present value of the cost savings is expected to be $1093.88 million using a 10 percent discount rate. The estimate does not include the additional cost of hazard evaluations that may be required by a state or local jurisdiction which will be avoided with the promulgation of a Federal standard. Furthermore, the estimates only include the additional cost of providing some form of information sheet and label. Thus, the cost of any other requirements has not been included. Also, any inefficiencies created due to the location of a plant or due to the change in the route of a chemical shipment have not been evaluated.

Discounted Cost Per Case

The monetized health benefits using the human capital approach do not represent the total expected benefits, but simply the portion of the benefits that could be quantified in dollar terms. A more appropriate measure of the benefits of health risk reduction is the workers' willingness to pay for the reduction in risk. Willingness to pay values invariably exceed the monetized human capital value by roughly a factor of 10. Workers have a much stronger stake in their individual health than would be reflected simply in foregone earnings or medical care bills.

To correct for the shortcoming of the human capital approach, an alternative method has been used to valuate the benefits from the reduction in health improvements. The discounted cost per case has been estimated using an assumption of immediate effectiveness of either 5 or 10

percent. This estimate can then be compared to the estimates of the average willingness to pay to prevent a lost workday injury or illness, or $30,000. A full discussion of the methodology is provided in Chapter III and Appendix D of the Regulatory 53330 Impact Analysis. It must be noted that this approach represents an alternative to the human capital method. Hence, these benefit values cannot be added to the benefits attributed to the reduction in chemical source injuries and illnesses.

The aggregation of the various categories of illness is achieved by weighting the illness and injury categories. The weights on non-loss workday cases, lost workday cases, disabling cases, and cancer cases are (½, 1, 1, 20) respectively. The discounted cost per case using an alternative weight of 5 on disabling illnesses is also estimated. Using the alternative assumptions and weighting schemes, the discounted cost per case ranges from $5,405 to $23,964. Thus, in light of the value of the willingness to pay the standard is justifiable using a wide range of effectiveness assumptions.

Effects on Small Entities

The final OSHA standard has included several provisions that will directly benefit small entities. In addition OSHA has designed the compliance activities and the phase-in of the final standard to reduce the regulatory burden for small entities in Standard Industrial Classification (SIC) Codes 20-39.

Relative Impact of Provision of MSDS Upon Request Versus With First Shipment

The final OSHA standard requires chemical manufacturers, repackagers, or other suppliers to provide material safety data sheets (MSDSs) with the first shipment of a chemical product. Several participants in the public hearing indicated that this requirement was necessary to en-

sure the effectiveness of a hazard communication program for small entities:

> Thousands of feed manufacturers are very small firms and most of them use a large number of ingredients. There is no practical way for the average feed manufacturer to determine if one of many products which he uses in his business is hazardous if he is not informed of this by the supplier of the product. MSDS are important sources of information to feed companies. Without them a feed company: (1) Would have no idea if a substance was hazardous or not; (Most feed manufacturers have neither the expertise nor resources to evaluate substances or mixtures.) (2) would be unable to evaluate what hazards the substance presents in order to determine any safety precautions necessary for employee safety. Feed manufacturers are at the mercy of their upstream suppliers to provide accurate MSDS's. OSHA needs to express clearly the responsibility of all upstream suppliers to supply downstream users with MSDS's (Ex. L-16).

> * * * the printing industry feels strongly that it is the distributors, repackagers, and importers who must furnish to the user employer material safety data sheets. This is essential in our industry since the fact (sic) majority of companies in printing purchase their supplies from distributors and repackagers. MSDS sheets from these firms will be the only way that thousands of small companies can gain access to the material and the information (Tr. 1315-16).

> * * * the small foundry and 80 percent of the 4300 foundries employ fewer than 100 people, so this is primarily and industry of small business. They do not have, I guess the word would be clout to obtain addi-

tional information from the vendors of the products (Tr. 1812).

Thus, the evidence in the public record supports the conclusion that one element of the market failure problem is the inability of managers of small manufacturing establishments to obtain the necessary information to implement a hazard communication program.

OSHA estimated the relative cost of an approach to require industrial users of chemical products to request an MSDS versus an approach to require chemical suppliers to provide an MSDS with the first shipment. These costs of the alternative approaches can be allocated to the respective employment categories in SIC 20-39 by weighting the total cost. The weights are simply the estimated total shares of shipments of regulated chemicals for each SIC/employment category.

The costs of developing the MSDSs, evaluating the hazards, and keeping records on the hazard evaluation process have been allocated to the entity size categories by weighting the total cost of compliance figures by the respective shares of regulated products for each employment category for SIC 28. A full discussion of the methodology and assumptions is available in Chapter V of the Regulatory Impact Analysis.

As presented in Table 5, the expected initial cost of the approach to require manufacturers to request MSDSs assuming $18.40 per request is $95.093 million for entities with 19 or fewer employees or $459 per establishment. The initial cost for this approach assuming $14.40 per request is $74.172 million for these entities or $358 per establishment. The final OSHA standard requires the MSDSs be provided with the first shipment of a chemical product. The expected initial cost for entities with 19 or fewer employees is $4.614 million or $23 per establishment.

TABLE 5.—DISTRIBUTION OF INITIAL COSTS OF ALTERNATIVE APPROACHES TO PROVISION OF MSDS
(Millions 1982)

Alternative approach	Entity size by number of employees (number of entities)			
	1-19 (207,103)	20-99 (76,933)	100-249 (20,807)	250 or greater (13,592)
Upon Request:				
$18.40 per Request	$95.093	$53.490	$21.792	$27.735
(Cost per Establishment)	(459)	(695)	(1,047)	(2,040)
$14.40 per Request	74.172	41.722	16.998	21.633
(Cost per Establishment)	(358)	(542)	(817)	(1,592)
First Shipment [1]	4.614	3.345	1.384	2.191
(Cost per Establishment)	(23)	(43)	(66)	(161)

Source: U.S. Department of Labor, Occupational Safety and Health Administration, Office of Regulatory Analysis, Tables IV-7, IV-8.

[1] Assumes 60 percent prior compliance. Provision of the MSDS with the first shipment is the approach selected by OSHA.

Relative Impact of Limited Versus Extended Responsibility of Hazard Determination

The final OSHA standard requires that a chemical manufacturer conduct a hazard evaluation of the chemicals he or she produces. The results of this preliminary evaluation are then to be provided to industrial customers in SIC 20-39 via hazard warning labels and MSDSs. This provision assigns the responsibility for the hazard determination to the employer who is most likely to have the evaluation expertise and data on the specific chemical. This delegation of responsibility for the initial hazard

evaluation will prove beneficial to managers of small entities who do not have the staff and other support facilities to evaluate chemicals purchased. This conclusion was supported by testimony such as that provided by Vulcan Chemicals:

> * * * we do not agree that each employer should *develop* a MSDS for hazardous chemicals purchased for use. The development of MSDS should be the responsibility of the manufacturers of hazardous chemicals or products which contain hazardous chemicals. It would be unreasonable to require each employer to evaluate each and every chemical-containing 53331 product which he purchases in order to determine whether or not it contains a hazardous chemical. It would also be unreasonable to require that each employer develop a MSDS for each product which he purchases and which contains a hazardous chemical (Ex. 19-165).

OSHA has evaluated the relative cost of the approach to limit responsibility for the hazard evaluation to chemical manufacturers or other suppliers versus the approach to extend responsibility to all manufacturing employers. Using the weighing procedure, the expected initial cost of limiting the responsibility for the hazard determination to chemical manufacturers as represented in Table 6, assuming an average cost of $650 per search, is $71.76 million for entities with 19 employees or fewer or $346 per establishment. The expected initial cost of extending responsibility to all employers in manufacturing assuming $650 per search is $83.982 million for entities with 19 employees or fewer or $405 per establishment. The initial cost for these entities if some testing of chemical products is necessary is expected to be $585.158 million or $2,825 per establishment assuming 1 percent of the chemical products would be tested for acute hazards.

TABLE 6.—DISTRIBUTION OF INITIAL COSTS OF LIMITED VERSUS EXTENDED RESPONSIBLITY FOR HAZARD DETERMINATION
(Millions 1982)

Alternative approach	Entity size by number of employees (number of entities)			
	1-19 (207,103)	20-99 (76,933)	100-249 (20,807)	250 or greater (13,592)
Limited Responsibility [1]				
$650 per Search	$71,760	$41,400	$16,450	$20,930
(Cost per Establishment)	(346)	(525)	(791)	(1,540)
Extended Responsibility [1]				
$650 per Search	83.982	47.239	19.246	24.495
(Cost per Establishment)	(405)	(614)	(925)	(1,802)
$4,529 per Test	585.158	329.152	134.099	170.671
(Cost per Establishment)	(2,825)	(4,278)	(6.445)	(12,557)

Source: U.S. Department of Labor, Occupational Safety and Health Administration, Office of Regulatory Analysis, Tables IV-7, IV-8.

[1] Assumes 60 percent prior to compliance. The limited responsibility alternative is the approach selected by OSHA.

Relative Impact of Allowance for Optional Labeling of Reactor Vessels

Many participants recommended that the final standard amend the labeling requirement to allow for the use of batch tickets, operating procedures, production sheets, and the like (Exs. 19-43, 19-44, 19-46, 19-48, 19-55, 19-58, 19-59, 19-60, 19-61, 19-64, 19-67, 19-71, 19-73, 19-76, 19-79, 19-88, 19-110, 19-111, 19-115, 19-119, 19-122, 19-126, 19-134, 19-137, 19-138, 19-140, 19-152, 19-158, 19-160, 19-162, 19-167, 19-176, 19-188, 19-190, 19-192, 19-194, 19-196, 19-204, 19-209, 19-215). The evidence presented in the public record indicates that this change will reduce the regulatory burden on small entities. Many small scale chemical specialty manufacturers, pesticide

producers, etc., are characterized by operations which include such processing. Hence, eliminating the perceived need to continually relabel in the case of a reaction process will not only reduce the cost of compliance for small entities, but also will enhance the effectiveness of a hazard communication program.

Relative Impact of Provision of Lists of Substances

Many participants requested that OSHA provide further guidance on the hazardous substances that would be covered by the standard (Exs. 19-65, 19-74, 19-109, 19-148, 19-166 and 19-175). A large segment of this population was representative of small entities. OSHA has included lists of chemicals that have been evaluated and found to be hazardous. This will provide a floor to the coverage of the standard.

Relative Impact of Exemption for Other Agency Labeling

Many participants, especially those representing small entities requested an exemption from the labeling requirement if a label was already required by another Federal agency (Exs. 19-51, 19-84, 19-110, 19-119, 19-143, 19-145, 19-162, 19-199, 19-204, 19-214). OSHA has included in the final standard a labeling exemption for hazardous chemicals that are subject to other Federal labeling requirements. This change should reduce the costs of compliance, especially for pesticide production, frequently a small scale operation.

Inclusion of Importers and Distributors

The final OSHA standard requires these employers to transmit labeled containers and MSDSs to manufacturing employers. The SIC 516 (Merchant Wholesalers of Chemicals and Allied Products) and SIC 517 (Merchant Wholesalers of Petroleum Products) are expected to be affected by this provision. A large proportion of these establishments are small entities: for SIC 516 and 517 respectively, 87 and 86 percent of the establishments have 19 em-

ployees or fewer. The additional cost that would be incurred by these employers, however, is expected to be minimal. These employers will merely be passing on information obtained from the chemical manufacturers. The benefits to these employers may be significant. The provision of hazard information will encourage the adoption of safer handling procedures.

Inclusion of Laboratories

The final OSHA standard requires that laboratory employees be apprised of the hazards of the chemical products used in their respective workplaces. The final standard exempts these entities, generally small scale production processes, from the labeling and MSDS requirements (except to maintaining existing labels), but subjects them to the education and training requirements. The additional cost of compliance for these entities is expected to be minimal, because testimony presented during the public hearing indicated that such education and training is already provided as a general rule.

Relative Impact of the Phase-In

The March 1982 proposal included different compliance periods for substances and mixtures and for employers as a function of employment size. The Small Business Administration (SBA) has indicated, however, that supply channels are not a function of size (Ex. 19-158). Large chemical manufacturers will demand information from small chemical suppliers, especially if the large manufacturer is deveoping a chemical mixture that will in turn be purchased by industrial users in SIC 20-39. As suggested by SBA, OSHA has therefore adopted a uniform effective date for chemical manufacturers and a delay in the effective date for industrial users:

> Chemical manufacturers must be in compliance with the requirements to provide MSDSs and labels to industrial customers within 24 months. All em-

ployers in SIC 20-39 must be in compliance with all components of the standard within 30 months.

53332 This phase-in will affect the total initial costs of the activities as well as distribution across entity size categories. The costs for development of MSDSs, labeling, hazard evaluation, and recordkeeping will be significantly reduced for small entities as a consequence of this phase-in of the standard. This is demonstrated in the following way. First, the expected distribution of the initial cost of compliance for the final standard allowing for the regulatory flexibility is presented. Second, the expected additional cost of compliance with the standard omitting the regulatory flexibility is presented.

As presented in Table 7, the total initial cost for small entities (establishments with 19 employees or fewer) is 30 percent of the total initial cost of the final standard. The hazard determination activity is approximately 34 percent of the total cost for these entities. It must be noted, however, that the weights applied may not fully capture the effects of regulatory flexibility on small entities. (A full explanation of the weights is available in Chapter V of the Regulatory Impact Analysis). The compliance time made available to chemical producers will allow employers in small establishments to use chemical hazard information generated by employers in larger establishments in SIC 28. The actual quantity of regulated chemical products that are purchased from large chemical manufacturers (with greater than 19 employees) by small chemical manufacturers (with 19 employees or fewer) was not available. In addition, the cost of labeling was not fully adjusted for the allowance for use of batch tickets and the like. Information on the exact number and distribution of containers that would qualify for such an option was not available. Evidence in the record suggests that this adjustment will reduce the relative costs for small entities. In the absence of these adjustments, the costs of some of the activities for small entities may be overstated.

TABLE 7.—DISTRIBUTION OF EXPECTED INITIAL COSTS BY ESTABLISHMENT SIZE ALLOWING FOR REGULATORY FLEXIBILITY
(Millions 1982)

Provision	Entity size by number of employees (number of entities)			
	1-19 (207,103)	20-99 (76,933)	100-249 (20,807)	250 or greater (13,592)
Review of Labels and MSDSs	$3.864	$2.801	$1.159	$1.835
Review of Education and Training	2.568	1.444	0.588	0.749
Hazard Determination	59.800	43.355	17.940	28.405
Labeling				
Containers Shipped	20.240	14.674	6.072	9.614
Large In-Plant	3.031	1.705	0.694	0.884
Small In-Plant	17.774	9.998	4.073	5.184
Subtotal	41.045	26.377	10.839	15.682
MSDS				
Preparation	6.794	4.926	2.038	3.227
Provision	4.614	3.445	1.384	2.191
Filing	4.434	2.494	1.016	1.293
Subtotal	15.842	10.865	4.438	6.711
Education and Training	37.693	57.067	46.911	129.133
Recordkeeping				
Computing	1.366	0.991	0.410	0.649
Accessing	10.155	5.712	2.327	2.962
Compliance Plan	6.089	3.355	1.427	1.652
Subtotal	17.610	10.058	4.164	5.263
Total	178.422	151.967	86.039	187.778

Source: U.S. Department of Labor, Occupational Safety and Health Administration, Office of Regulatory Analysis.

As presented in Table 8, the average initial cost per establishment allowing for regulatory flexibility is influenced significantly by the size of employment. The average expected initial costs per entity for those with fewer than 19 employees is $861. For relatively large entities with 250 employees or greater, the average initial cost is $13,815.

TABLE 8.—DISTRIBUTION OF EXPECTED AVERAGE COST ALLOWING FOR REGULATORY FLEXIBILITY (1982)

Employment size category	Average initial cost per entity	Average employment per entity	Average initial cost per employee
1-19	$861	5	$172
20-99	1,975	37	54
100-249	4,135	124	33
250 or greater	13,815	559	25

Source: U.S. Department of Labor, Occupational Safety and Health Administration, Office of Regulatory Analysis.

Scale economies do occur, however, as reflected by the estimates of average initial cost per employee for each entity size category. Large establishments can effectively spread much of the overhead cost of a hazard communication program over a larger work force. The average cost for large entities with 250 employees or greater is approximately $25. For relatively small entities with 19 employees or fewer, the average initial cost per employee is $172.

Without the allowance for regulatory flexibility, each employer in the manufacturing sector may have to inventory the chemical products in the workplace, evaluate the chemical products in his or her workplace for health hazards, develop MSDSs for the chemical product in the workplace if they are not already available, and review the labels on some of the chemical containers in the workplace. Assuming a worst case scenario, each employer in

manufacturing would be required to conduct an immediate inventory of chemical products in his or her workplace. The employer would then evaluate the chemical products for health hazards, review the labels on containers of such products, and develop an appropriate MSDS for each product if one does not exist in the workplace. The potential costs associated with this scenario have been estimated as follows.

It is assumed that a supervisor would spend an average of 5 minutes per chemical developing a chemical inventory and reviewing the label on the container. Supervisory time is valued at $21 per hour. Thus, as presented in Table 9 an additional cost of $21.619 million would be incurred by small entities and an additional cost of $44.59 million would be incurred by all entities in manufacturing. As presented in Table 9, the expected additional cost for each employer to evaluate immediately the chemical products in his or her workplace would be $4,941.5 million for small entities and $10,182.835 million for all of the entities in the manufacturing sector.

The expected incremental cost of MSDS development as presented in Table 9 would be $183.33 million for small entities and $377.783 million for all of the entities in the manufacturing sector. The expected total additional cost for all of these activities would then be $5,146.499 million for small entities and $10,605.208 million for all entities in the manufacturing sector. These estimates are conservative in that only 5 minutes of the supervisor's time has been allocated to the inventory and the label review. Furthermore, it has been assumed that appropriate labels would be readily available from the producers of the chemical products. Relaxing these assumptions would imply that additional costs for the chemical inventory, label review, and label modification and redesign would be incurred by all entities.

TABLE 9.—DISTRIBUTION OF ADDITIONAL COSTS ATTRIBUTED TO THE ELIMINATION OF REGULATORY FLEXIBILITY
(Millions 1982)

Provision	Entity size by number of employees				
	1-19	20-99	100.249	250 or Greater	Total
MSDS Development	$183.330	$101.383	$43.127	$49.943	$377.783
Chemical Inventory	21.619	11.995	5.086	5.890	44.590
Hazard Evaluation	4,941.500	2,732.686	1,162.462	1,346.187	10,182.835
Total	5,146.449	2,846.064	1,210.675	1,402.02	10,605.208

Source: U.S. Department of Labor, Occupational Safety and Health Administration, Office of Regulatory Analysis.

Industry Effects

The expected compliance cost for the final OSHA standard has been calculated for each industry in manufacturing. The cost estimates are approximations and may not sum to the total figures provided in Chapter IV of the Regulatory Impact Analysis. These cost figures do, however, indicate the relative impact on the respective industry. The costs of hazard evaluation, labeling of chemical shipments, label review, label modification and redesign, MSDS development, MSDS provision with shipments, and hazard recordkeeping have been attributed to SIC 28. Some of these costs may actually be incurred by establishments in SIC 2911 or perhaps by other industrial suppliers.[1] Further disaggregation of these costs, however, was not possible. In the absence of the necessary information for an accurate adjustment for the industry groups, the costs assigned to SIC 28 may be overestimated.

As presented in Table 10, the industries associated with a relatively high compliance cost include Food and Kindred Products (SIC 20), Lumber and Wood Products

[1] The distributional impact on importers, repackagers, and distributors was discussed in a previous section.

TABLE 10.—EXPECTED TOTAL INITIAL COST AS A PERCENT OF PAYROLL, AND AS A PERCENT OF VALUE-ADDED BY INDUSTRY (1982)

(SIC)	Expected total cost (millions)	Cost as percent of payroll [1]	Cost as percent of value-added [2]	Average cost per employee
(20) Food and Kindred Products	$27.428	0.15	0.04	$23.82
(21) Tobacco Manufacturers	0.872	0.12	0.02	17.60
(22) Textile Mill Products	13.979	0.19	0.09	20.84
(23) Apparel and Other Textile Products	22.809	0.27	0.13	20.60
(24) Lumber and Wood Products	17.391	0.28	0.13	33.68
(25) Furniture and Fixtures	9.134	0.24	0.12	25.78
(26) Paper and Allied Products	11.663	0.14	0.05	24.31
(27) Printing and Publishing	38.105	0.30	0.13	44.00
(28) Chemicals and Allied Products	260.018	2.10	0.14	408.09
(29) Petroleum and Coal Products	2.252	0.09	0.02	25.55
(30) Rubber and Plastic Products	14.200	0.21	0.09	26.51
(31) Leather and Leather Products	4.314	0.24	0.12	22.48
(32) Stone, Clay and Glass Products	12.533	0.18	0.07	26.91
(33) Primary Metal Industries	18.024	0.11	0.05	19.96
(34) Fabricated Metal Products	30.674	0.17	0.08	27.21
(35) Machinery, Except Electrical	41.247	0.16	0.07	28.48
(36) Electrical Equipment and Supplies	29.355	0.15	0.07	21.58
(37) Transportation Equipment	27.368	0.10	0.05	21.25
(38) Instruments and Related Products	10.163	0.15	0.06	25.69
(39) Misc. Manufacturing Products	11.555	0.29	0.13	34.36

[1] The payroll (1976) for each SIC category is taken from U.S. Department of Commerce, Bureau of Census, *Statistical Abstract of the U.S.*, 1979.

[2] The value-added (1976) for each SIC category is taken from U.S. Department of Commerce, Bureau of Census, *Statistical Abstract of the U.S.*, 1979.

Source: U.S. Department of Labor, Occupational Safety and Health Administration, Office of Regulatory Analysis.

(SIC 24), Printing and Publishing (SIC 27), Chemical and Allied Products (SIC 28), Fabricated Metal Products (SIC 34), Machinery Except Electrical (SIC 35), Electrical Equipment and Suppliers (SIC 36), and Transportation Equipment (SIC 37). The cost as a percent of payroll and value-added are the highest for SIC 28 at 2.1 percent and 0.14 percent, respectively. As noted previously, some of the cost attributed to producers of chemical products is likely to be incurred by employers in other industries.

OSHA has determined that the final standard will not impose a substantial burden on the affected industries. Hence, OSHA has concluded that the standard is economically feasible.

Environmental Assessment—Finding of No Significant Impact

The Hazard Communication standard and its major alternatives, as well as responses to OSHA's Notice of Proposed Rulemaking (NPRM) (47 FR 12092-12123, March 19, 1982) have been reviewed. No comments were received which specifically addressed the 53334 environmental assessment for this standard.

In accordance with the National Environmental Policy Act (NEPA) (42 U.S.C. 4321 et seq.), as interpreted by the Council on Environmental Quality (CEQ) guidelines (40 CFR Part 1500 et seq.), and with the Department of Labor (DOL) NEPA Compliance Regulations (29 CFR Part 11; 45 FR 51187 et seq., August 1, 1980), the Assistant Secretary for OSHA has determined that the proposed rule will have no significant environmental impact.

As presented in the NPRM and as outlined in earlier sections of this preamble, this action would allow employees easier access to information on hazardous chemical substances present in the workplace through the use of labels and hazard warnings, material safety data

sheets, information and training, and access to written records. The worker population, in effect, is expected to experience a significant benefit in health and safety from the improved workplace environment that is expected to result from implementation of the standard.

A review of the summary and explanation of this rule indicates that the standard is unlikely to result in the occurence of significant health or environment effects outside of the workplace. The labeling of chemical containers to identify their contents would not have a direct or significant impact on air or water quality, land or energy use, or waste disposal outside of the workplace, because the nature of a substance would not be changed through its identification. For example, the labeling of a container would not eliminate the possibility of the chemical contents leaking into the external environment. However, it is possible that there would be some potential, indirect benefit to the external environment as a result of the proposed regulation. The labeling of toxic substances generally would create a greater awareness of their nature and effects, which in turn could lead to a more careful handling of them. To the extent that these substances are handled more carefully, there would be a beneficial impact on air and water quality and on solid waste disposal, although containers of hazardous waste are exempt from the labeling requirements. In cases where reclamation or recycling of materials from solid waste occurs, or where cleanup of abandoned or contaminated landfills take place, identification of hazardous substances may prove useful and cost-effective. Such benefits of course depend on the continued presence of the hazard information itself, and labels can deteriorate or be removed over time. Moreover, because hazard warning information on the label is intended to alert employees to hazardous materials in the workplace, this information will not identify or encompass all of the potential hazards that may occur outside of the workplace.

In addition, for reasons discussed elsewhere in this preamble, none of the alternatives considered by OSHA would significantly increase the effectiveness of the standard. Other provisions, such as expanded requirements of material safety data sheets, chemical listing, education and training, compliance periods, and recordkeeping, would have no significant environmental impacts outside of the workplace.

Moreover, no evidence has been presented to show that the regulation would have any significant adverse impacts on the external environment, would result in any irreversible or irretrievable commitment of resources, or would adversely affect the short-term uses of the human environment and the maintenance or enhancement of long-term productivity.

Accordingly, on the basis of the discussion presented earlier in this notice, OSHA has determined that the hazard communication standard does not significantly affect the quality of the human environment and that preparation of an EIS is not required.

IV. Summary and Explanation of the Standard

The following is a paragraph-by-paragraph summary of the provisions of the final standard:

(a) *Purpose.* In the ~~final st~~andard, a paragraph has been added to specify what OSHA intends to accomplish through promulgation of the standard. In essence, the paragraph states that the final Hazard Communication standard is intended to ensure that all employees in the manufacturing sector, Standard Industrial Classification (SIC) Codes 20 through 39, are apprised of the hazards they work with through a hazard communication program. This program is to include container labeling material safety data sheets, and employee training.

The paragraph goes on to state that OSHA intends to comprehensively address the issue of evaluating and com-

municating chemical hazards to employees in the manufacturing sector in this standard, and to preempt any state law pertaining to this subject. Thus if a state wishes to regulate in this area, it can only do so if the standard is approved by OSHA under section 18(b) of the Act which deals with state plans. This preemption will serve to reduce the burden on interstate commerce produced by conflicting state and local regulations and will ensure that all employees in the manufacturing sector are accorded the same degree of protection. OSHA will examine carefully any state requests to regulate in this area to determine any potentialy burdensome impact on interstate commerce as well as to ascertain whether there is a compelling need for a separate regulation.

(b) *Scope and application.* The final hazard communication stnadard applies to employers and employees in the manufacturing SIC Codes, 20 through 39. The manufacturers in these SIC codes who produce chemicals for use or distribution, and importers of such chemicals, must evaluate the hazards of these substances. All employers in the manufacturing sector must establish a hazard communication program for their employees. In addition, distributors of hazardous chemicals are required to transmit hazard information to their manufacturing sector customers.

The proposed standard also applied to the manufacturing SIC codes. As discussed elsewhere in this preamble, OSHA has concluded that the need for hazard communication is greatest in the manufacturing sector, and is exercising its priority setting authority by choosing to regulate this segment of industry at this time, and reserving the right to separately regulate other segments in the future.

The scope of the final standard has been expanded to cover importers and distributors. The rulemaking record indicated that in order for the flow of hazard informa-

tion from upstream manufacturers to downstream users to be continuous and effective, all aspects of the supply chain have to be specifically included in the scope of the standard. Thus, in the final standard importers are required to supply the same information as domestic manufacturers of a hazardous chemical. Distributors are to ensure the downstream flow of information by shipping labeled containers and making an appropriate material safety data sheet available to downstream purchasers.

The standard also applies only to chemicals which are known to be present in the workplace and to which employees may be exposed under normal conditions of use or in a foreseeable emergency. This means that employers must assess and communicate the hazards of any such chemicals, but do not have to analyze complex chemical mixtures in the 53335 workplace to determine the precise composition and components. That is, the term "known" means the employer need not analyze intermediate process streams, for example, to determine the presence of quantity of trace contaminants. However, where the employer knows of such contaminants, and they are hazardous, then they fall under the provisions of the standard.

There are a number of laboratories in the manufacturing facilities covered by this standard, and they receive different treatment in terms of hazard communication requirements. Employers are to ensure that labels on incoming containers of hazardous chemicals are not removed or defaced. Furthermore, any material safety data sheets received with such chemicals are to be maintained, and accessible to employees. Employers are also to ensure that laboratory employees are apprised of the hazards of the chemicals they work with in accordance with the training provisions of this standard. In all other respects laboratories in the covered SIC Codes are exempt from the provisions of the hazard communication standard. For example, employers need not label

every container used in the laboratory with an identity and hazard warning as would otherwise be required.

The standard also exempts potentially hazardous chemicals that are brought into the workplace for the personal consumption of employees, such as foods, drugs, cosmetics or tobacco products.

The standard also included specific labeling exemptions for chemicals which are regulated by other Federal agencies, and total exemptions for certain classes of substances which are not expected to be hazardous for purposes of this standard.

(c) *Definitions.* The final standard includes a number of definitions which provide the framework to determine which employers are covered by the standard; what substances are covered by the standard; how the standard defines hazards; and how OSHA defines other key terms for purposes of the standard, such as what constitutes a trade secret. Since a number of these definitions are unique in this standard, they should be consulted to ensure that the provisions are properly understood.

The standard applies to several different groups of businesses, in varying degrees of coverage. All of the hazard communication provisions apply to "employers" who are defined as businesses within SIC Codes 20 through 39 where chemicals are "either used, or are produced for use or distribution." "Produce" means to "manufacture, process, formulate, or repackage." "Use" means to "produce, handle, react, or transfer." Those "employers" who "produce" chemicals for "use or distribution" are considered to be "chemical manufacturers," and thus have additional hazard evaluation duties to perform.

The standard also requires "importers" to evaluate the hazards of chemicals. An importer "receives hazardous chemicals produced in other countries for the purpose of supplying them to distributors or manufacturing pur-

chasers within the United States." "Distributors" supply "hazardous chemicals to other distributors or to manufacturing purchasers." "Manufacturing purchasers" are "employers" who purchase a hazardous chemical for use within a workplace in SIC Codes 20 through 39.

The standard applies to any chemical which is known to be present in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency. A "chemical" is broadly defined as "any element, chemical compound, or mixture of elements and/or compounds." "Articles" are excluded under the scope of the standard from being covered as a "chemical." A mixture is defined as "any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction". "Exposure" occurs when an employee may inhale, ingest, or absorb a hazardous chemical during the course of employment. The definition includes both potential and current "exposure." A "foreseeable emergency" is one which employers would normally plan for as a presumed potential occurrence determined by the nature of the operation, i.e. equipment failure or rupture of containers.

The standard applies to both "physical" and "health" hazards. Each of these terms is defined by listing the various types of "physical" and "health" hazards covered. These listed hazards are then individually defined, or in the case of "health" hazards, further explained in Appendix A.

If a "container" of a hazardous chemical is present in, or leaves the workplace, it must be labeled with an "identity" and "hazard warning." A "container" is anything that holds hazardous chemicals except pipes and piping systems. A "label" is any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals. An "identity" is any name used on the material safety data sheet for the chemical, and on the

list of hazardous chemicals in the workplace. The name used should permit cross-references to be made among these three items. The "hazard warning" conveys the hazards of the chemical(s) in the container to employees. This message may be conveyed by words, symbols, pictures, or any combination thereof.

(d) *Hazard determination.* A new paragraph has been added to the final standard to separate out and highlight the provisions concerning the determination of what constitutes a hazard for purposes of the standard.

The primary duty for hazard evaluation lies with the chemical manufacturers and importers of hazardous chemicals. Under the provisions of this paragraph, they are required to evaluate the chemicals they produce or import in their workplaces to determine if they are hazardous. Employers may rely on the evaluation performed by the chemical manufacturer or importer for chemicals they use within their workplaces to satisfy this requirement.

The chemical manufacturers, importers, or employers are to be held accountable for the quality of the hazard determinations they perform. Each chemical is to be evaluated for its potential to cause adverse health effects, as well as its potential to pose physical hazards, such as flammability. The particular health and physical hazards to be considered are enumerated in the definition for a "hazardous chemical." Additional definitions are provided for the terms used in the definition for a hazardous chemical. The specific physical hazards are also defined in the definitions paragraphs. The health hazard definitions are contained in Appendix A. Appendixes A and B are integral parts of this hazard determination paragraph.

Appendix A contains a discussion of the difficulty in definitively identifying all possible health effects, and indicates the broad approach the standard intends in its

coverage of such effects. It further provides specific definitions for certain acute hazards, such as "corrosive" and "sensitizer." In addition, the Appendix includes a target organ categorization of health effects which gives examples of signs and symptoms of exposure as well as indications of substances which have been found to affect the target organ. This informaiton is also provided to indicate the broad scope of health hazards to be covered. Essentially, the employer must report any adverse health effect for which there is scientific (i.e. statistically significant) evidence based on at least one positive study conducted in accordance with established scientific principles, that it 53336 may occur as a result of employee exposure.

Appendix B provides further guidance to the employer in terms of the criteria to be applied in determining whether or not a chemical is hazardous for purposes of the standard. As examples of evidence to be considered, OSHA indicates that both human and animal data must be evaluated. Furthermore, if an available study indicates that an adverse health effect is likely to occur, and that study is conducted according to scientific principles and results in statistically significant findings, the employer is required to report it whether he agrees with the finding or not. Employers are free to report such findings in a non-conclusionary fashion, i.e. they don't have to agree with it, but they do have to report it. Employers may also report any negative data they believe is relevant to the hazard potential of the chemical. An additional Appendix C lists a number of sources which are available for employers in their search for information on hazards.

The hazard determination paragraph also includes two provisions which establish certain substances as being hazardous chemicals in any occupational setting. These substances are those currently regulated by OSHA under 29 CFR Part 1910, General Industry Standards, and

those listed by the American Conference of Government Industrial Hygienists (ACGIH) in their latest edition of the *Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment.* This provision establishes a "floor" of over 600 substances to be communicated to employees.

In addition, OSHA has defined a carcinogen for purposes of communication of hazards as any substance found to be a confirmed or suspected carcinogen by the International Agency for Research on Cancer, the National Toxicology Program, or OSHA. Use of these sources should eliminate much controversy involved in defining and identifying carcinogens. The hazard determination paragraph (d) also addresses the coverage of hazardous chemicals which are mixtures. Mixture coverage is divided into several considerations. First of all, if the employer has objective test data on the mixture as an entity, that data must be used to determine the hazards. If such data are not available for the health hazard determination, then the employer must consider the mixture to have the health hazards of those components which comprise one percent or more of the total composition. If any of the components are carcinogens, the mixture must be considered to be carcinogenic if the component is present in concentrations of 0.1% or more.

If the mixture has not been objectively evaluated to determine its physical hazard potential, the employer may use whatever scientifically valid information is available to subjectively assess the potential hazards.

Finally, if the employer has evidence to indicate that a component which comprises less then one percent of the mixture could be released in concentrations which would exceed an established permissible exposure limit under normal conditions of use, it must be identified. Furthermore, if the employer has reason to believe that the component could be released in quantities hazardous

to the health of employees, it shall also be identified even though present in quantities less than one percent of the total weight or volume, or less than 0.1% in the case of a carcinogen. The procedures used to evaluate hazards must be prepared in writing. The written description may be included in the written hazard communication program required under paragraph (e).

(e) *Written hazard communication program.* The final standard requires each employer to establish a comprehensive hazard communication program for their employees, which includes at least the mandated container labeling, material safety data sheets, and an employee training program. The program is to be written, and is to include how the employer plans to meet the criteria of the standard regarding labels, material safety data sheets, and training; a list of the hazardous chemicals in each work area, the methods the employer will use to inform employees of the hazards of non-routine tasks, as well as of the hazards associated with chemicals contained in unlabeled pipes in their work areas, and the methods employers will use to inform contractors in manufacturing facilities of the hazards to which their employees may be exposed.

The written program need not be lengthy or complicated, but should adequately address each of the required components in the program. Some employers already have aspects of their existing hazard communication programs in written form. These need not be modified to comply with this requirement as long as they address the minimal criteria established in the standard.

The written program is to be made available to employees, their designated representatives, the Assistant Secretary for OSHA and the Director of NIOSH.

(f) *Labels and other forms of warning.* Chemical manufacturers, importers and distributors are required to ensure that containers of hazardous chemicals leaving

the workplace are labeled, tagged or marked with the identity, appropriate hazard warnings, and the name and address of the manufacturer or other responsible party. Additionally, they are to ensure that these labels do not conflict with those applied in accordance with Department of Transportation regulations under the Hazardous Materials Transportation Act. If labels already applied by the manufacturer, importer, or distributor contain the minimal information required by OSHA, additional labels need not be affixed.

The final standard requires that each container in the workplace be labeled, tagged or marked with the identity of hazardous chemicals contained therein, and hazard warnings appropriate for employee protection. The term "identity" is defined for purposes of this standard as being any designation the employer chooses to use, as long as it also appears on the list of hazardous chemicals for the work area, and on the associated material safety data sheet. The hazard warning is to be any type of message, words, pictures, or symbols, which convey the hazards of the chemical(s) in the container. The employer is responsible for selecting the message and ensuring that it is effective for the purpose involved.

OSHA recognizes that container labeling may be difficult, or in some cases impractical, to accomplish within a plant. Therefore, several exemptions to in-plant individual container labels have been included in the final standard. If there are a number of stationary containers within a work area which have similar contents and hazards, the employer may post signs or placards which convey the hazard information required rather than individually labeling each piece of equipment. Employers may also use various types of standard operating procedures, process sheets, batch tickets, blend tickets, or other such written materials as substitutes for individual container labels on stationary process equipment. However, these written materials must contain the same informa-

tion as is required on the labels, and must be readily accessible to workers in the work areas. This requirement does not apply to pipes or piping systems, which are exempted altogether from the labeling requirements.

53337 One additional exemption is included for in-plant containers. Employers are not required to label portable containers, into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer. According to the definition of immediate use, the container must be under the control of the employee performing the transfer, and used within the workshift when the transfer has been made, for the exemption to apply.

The standard also requires that employers ensure that labels on incoming containers of hazardous chemicals are not removed or defaced, unless they are immediately replaced with another label with the required information. In addition, labels are to be legible, in English and prominently displayed on the container. Employers may add information in other languages as well, as long as the message also appears in English.

(g) *Material safety data sheets.* The final standard requires chemical manufacturers and importers to develop material safety data sheets for each hazardous chemical they produce or import. Employers are required to obtain or develop a material safety data sheet for each hazardous chemical used in their workplaces.

Specific requirements are included for the information to be provided on the MSDS. Such information is to be in English, and includes the identity, as well as chemical and common names, for the hazardous chemical. Special provisions apply to the listing of ingredients for hazardous chemicals which are mixtures. For physical hazards, the employer is to list those ingredients which he or she has determined present a physical hazard. For

health hazards, the employer must list each component which comprises 1% or more, and which is itself a health hazard. Any chemical which is determined to be a carcinogen must be listed if it is present in quantities of 0.1% or greater. Employers must also list ingredients present in concentrations of less than one percent if there is evidence that the permissible exposure limit may be exceeded or if it could present a health hazard in those concentrations.

In addition to identity information, the employer must provide information specified on the physical and chemical characteristics of the hazardous chemical, known acute and chronic health effects and related health information, as well as information concerning exposure limits, whether the chemical is considered to be a carcinogen by NTP, IARC, or OSHA, precautionary measures, emergency and first aid procedures, and identification of the person responsible for the sheet.

In some situations, employers may have more than one complex mixture in the workplace which have similar contents and hazards. For example, petroleum streams have essentially the same chemical components, but may vary slightly in concentrations of these components. The hazards are essentially the same. Employers may prepare one MSDS for all of these similar mixtures in order to comply with the provisions of this standard.

If a manufacturer or importer cannot find the appropriate information to complete a specified category, then the MSDS must be marked to indicate that no information was found. In other words, the employer must not leave blank spaces on the sheets which would then be open to interpretation as to the significance of not having an entry in them. If the category is not applicable to the chemical involved, the space should be marked to indicate that as well.

The chemical manufacturer, importer or employer is to ensure that the MSDS accurately reflects the scientific evidence which formed the basis for the determination that the chemical in question is hazardous. The chemical manufacturers, importers, and employers should remain aware of the development of new and significant information regarding the potential health hazard of a chemical in their workplace. When they do obtain such information, they must add it to the MSDS within three months. If the chemical is not being produced at the time of the information is discovered, the information need not be entered onto the MSDS until the chemical is reintroduced into the workplace, and thus employees are potentially exposed.

An MSDS is to be provided to manufacturing purchasers of hazardous chemicals with their first shipment. Providing an MSDS does not imply that the sheet need be physically attached to the shipment. It may be transmitted by mail, through a computer link-up, or in any other effective manner the manufacturer chooses. When an MSDS is updated, the new version must be transmitted to the manufacturing purchaser with the next shipment. Although the chemical manufacturers and importers have a positive duty to provide such information, there may be situations where the MSDS is lost or misplaced. If one is not received as anticipated, the manufacturing purchaser must make efforts to obtain one as soon as possible.

Distributors are responsible for ensuring that manufacturing purchasers of their hazardous chemicals are provided an appropriate MSDS. This may be accomplished by providing an MSDS prepared by the producer of the chemical.

Copies of the MSDSs for hazardous chemicals in a given work area are to be readily accessible to employees in that work area. In order for the MSDS to serve as a source of detailed information on hazards, it must be

located close to workers, and readily available to them during each workshift.

As was the case with labels, alternatives to MSDSs within a plant are also permitted as long as they provide the appropriate information, and are readily accessible to employees. These would be expected to take the form of written operating procedures, manuals, etc. The employer may also use this alternative approach to address the hazards of a process, rather than individual chemicals. However, information must still be available to employees for each hazardous chemical involved.

MSDSs are to be made available to employees and their designated representatives, the Assistant Secretary and the Director. They must be maintained in a current fashion, and need not be retained for any specified period of time beyond that, except to the extent required by the Employee Access to Exposure and Medical Records rule, 29 CFR 1910.20.

(h) *Employee information and training.* Employers are to establish a training and information program for employees exposed to hazardous chemicals. Such training is to be provided at the time of initial assignment, and whenever a new hazard is introduced in their work area. Of course, any employees who have not been trained previously must receive training equivalent to the required initial assignment training when this standard takes effect.

The standard specifies the information to be transmitted to employees. First they are to be informed of the requirements of this regulation, i.e., that it exists, that employers are required to have hazard communication programs, and the components of the programs in their workplaces. Employees are also to be informed of any operations in their work area where hazardous chemicals are present, and where the employer will be keeping the written materials required under this stand-

ard, including the written hazard evaluation procedures, written program, lists of hazardous chemicals, and MSDSs required by this section.

53338 Employees are also to be trained regarding methods and observations they may use to detect the presence of a hazardous chemical in their work area. For example, employees should be informed of the visual appearance or smell of the chemicals they may be exposed to, so they will know when they are being released into the work atmosphere. Employees are also to be trained specifically about the hazards of the chemicals in their work areas. This may be done by specific chemical or by categories of hazards, but in any case, the employee is to be aware that information is available on the specific hazards of individual chemicals through the material safety data sheets. Training is to include the measures employees can take to protect themselves from the hazards, and is to indicate the specific procedures implemented by the employer to provide protection, such as work practices and the use of personal protective equipment. In addition, the employer is to explain the hazard communication program implemented in that workplace, including how to read and interpret information on labels and material safety data sheets, and how employees can obtain and use the available hazard information.

(i) *Trade secrets.* OSHA recognizes in the final standard that specific chemical identity information can constitute a *bona fide* trade secret, and thus provisions are made to protect such an identity while providing for the proper protection of exposed employees. This is accomplished by providing for limited trade secret disclosure to health professionals under prescribed conditions of need and confidentiality. The term "specific chemical identity" is used to describe the trade secret information being discussed. This term refers to the chemical name, the Chemical Abstracts Services (CAS) Registry Number, or any other specific information which reveals the

precise chemical designation. It does not include common names.

The proposed standard did not include a definition for the term "trade secret," although OSHA stated that the Agency considered the definition derived from the Restatement of Torts to be the appropriate one. In response to comments suggesting that the definition be explicitly stated in the final standard, a slightly modified version of that definition has been added to clarify what the Agency considers to be a trade secret for purposes of this standard.

Given that it is recognized that the specific chemical identity of a chemical may be a trade secret, the standard establishes an information disclosure scheme which requires the release of essential hazard information, and defines the terms under which the specific chemical identity must also be released.

The chemical manufacturer, importer or employer is permitted to withhold the specific chemical identity from the MSDS if certain conditions can be met: (1) The chemical manufacturer, importer or employer can support the claim that the information withheld is a trade secret; (2) information concerning the properties and effects of the hazardous chemical is disclosed as required on the appropriate material safety data sheet; (3) the chemical manufacturer, importer, or employer indicates on the MSDS that the specific chemical identity is being withheld as a trade secret; and (4) the specific chemical identity is made available to health professionals under certain specified situations. Health professionals are considered to be physicians. Industrial hygienists, toxicologists, or any other person providing medical or other occupational health services to exposed employees.

The final standard's provisions make a distinction between the trade secret disclosure requirements in the

event of a medical emergency and in non-emergency situations.

In the case of a medical emergency, the chemical manufacturer, importer, or employer must immediately disclose the specific chemical identity of a hazardous chemical to a treating physician or nurse when the information is needed for proper emergency or first aid treatment. As soon as circumstances permit, however, the chemical manufacturer, importer, or employer may obtain a written statement of need and a confidentiality agreement as provided for below.

OSHA considers it to be appropriate for the treating physician or nurse to have the ultimate responsibility for determining that a medical emergency exists. At the time of the medical emergency, their professional judgment regarding the situation must form the basis for triggering the immediate disclosure requirement. Although there will undoubtedly be situations which, when viewed in retrospect, do not appear to be genuine emergencies, OSHA has determined that the short-term necessity for appropriate emergency treatment far outweighs the risk of unnecessary disclosure of secret information. Since the chemical manufacturer, importer, or employer can require a written statement of need and a confidentiality agreement to be completed after the emergency is abated, further disclosure of the trade secret can be effectively controlled. If a chemical manufacturer, importer or employer refuses to provide specific chemical identity information in the event of a medical emergency, OSHA regulations would provide appropriate enforcement remedies.

In drafting the medical emergency disclosure requirement, OSHA considered whether to allow the chemical manufacturer, importer, or employer to suggest alternatives to disclosure of the type stated in the provisions for non-emergency situations (paragraph (i)(7)(v)).

However, OSHA determined that the emergency nature of the situation addressed necessitates disclosure of the specific chemical identity immediately without the opportunity for the chemical manufacturers, importer or employer to explore possible suitable alternatives with the treating physician or nurse.

In non-emergency situations, chemical manufacturers, importers, or employers are required to disclose the withheld specific chemical identity to health professionals providing medical or other occupational health services to exposed employees if certain conditions are met. The concept of "health professional" is more broadly stated than for emergency situations, and includes any physicians, industrial hygienists, toxicologists, or epidemiologists who provide these medical or other occupational health services to exposed employees. Nurses are not included among the health professionals entitled to access to specific chemical identities in non-emergency situations. OSHA has determined that it is more appropriate, given the competing interests balanced in this standard, to entrust such information to the physician to whom a nurse would normally report. The request for information must be in writing, and must describe with reasonable detail the medical or occupational health need for the information. To be considered a medical or occupational health need for purposes of this standard, the health professional must be planning to use the specific chemical identity information for one or more of the following activities:

1. To assess the hazards of the chemicals to which employees will be exposed.
2. To conduct or assess sampling of the workplace atmosphere to determine employee exposure levels.
3. To conduct pre-assignment or periodic medical surveillance of exposed employees.
4. To provide medical treatment to 53339 exposed employees.

5. To select or assess appropriate personal protective equipment for exposed employees.
6. To design or assess engineering controls or other protective measures for exposed employees.
7. To conduct studies to determine the health effects of exposure.

It should be noted that for purposes of this standard, exposure includes potential, as well as current, exposure situations. Thus the health professionals will be able to obtain the necessary information prior to the actual ex posure of employees, and can implement preventive measures to avoid the occurrence of health effects.

In addition, the written request must also explain in detail why the disclosure of the specific chemical identity is essential to providing the occupational health services, and why disclosure of the following types of information would not satisfy the health professional's need:

1. Properties and effects of the chemical.
2. Measures for controlling workers' exposure to the chemical.
3. Methods of monitoring and analyzing worker exposure to the chemical.
4. Methods of diagnosing and treating harmful exposures to the chemical.

OSHA anticipates that in many situations this alternative information will be sufficient to satisfy the health professional's needs.

The request for the information must further provide a description of the procedures to be used to protect the confidentiality of the information. An agreement not to use the information for any purpose other than the health need asserted or to release it under any circumstances other than to OSHA must also be included, and signed by the health professional as well as the employer or con-

tractor of the health professional's services. The requirement that the employer or contractor of the health professional's services be a cosignatory to the agreement applies equally regardless of whether the health professional is providing occupational health or medical services to a downstream employer, labor organization, or individual employees, and regardless of whether the health professional is being paid for his services. This makes explicit that both the principal and the agent are legally responsible for compliance with the agreement, although only the health professional may actually have access to the specific chemical identity information.

The provisions of the confidentiality agreement may not include requiring the posting of a penalty bond. It may restrict use of the information to the purposes indicated in the statement of need, prohibit disclosure to anyone other than OSHA who has not signed an agreement, and provide for appropriate legal remedies, including stipulation of a reasonable pre-estimate of likely damages. Nothing in the standard is meant to preclude the parties from pursuing non-contractual remedies to the extent permitted by law.

If the health professional decides there is a need to disclose the information to OSHA, the chemical manufacturer, importer, or employer who provided the information must be informed by the health professional prior to, or at the same time as, such disclosure.

If the chemical manufacturer, importer, or employer denies the written request for information, the denial must also be in writing, and be provided to the health professional within thirty days of the request. The denial must provide evidence to support the claim that the chemical identity is a trade secret, state the specific reasons why the request is being denied, and explain in detail how alternative information may satisfy the occupational health need without revealing the specific chemical identity.

The requesting health professional who still needs the information may then refer the matter to OSHA for consideration. The original request, as well as the written denial, must be provided to OSHA at the time of this referral. OSHA will review these documents to determine whether the chemical manufacturer, importer, or employer has supported the claim that the specific chemical identity is a trade secret, and that the health professional has demonstrated a medical or occupational health need for the information, as well as adequate means to protect the confidentiality of the information.

If OSHA determines that the specific chemical identity is not a trade secret, the employer will be subject to citation. Similarly, the employer will be subject to citation if the specific chemical identity is a trade secret, but the requesting health professional has demonstrated a medical or occupational health need, executed a confidentiality agreement, and has shown adequate means for complying with the terms of the confidentiality agreement. Abatement of the citation will most likely be to divulge the specific chemical identity subject to the confidentiality agreement. However, consistent with the power given to the Secretary in Section 15 of the Act, if the chemical manufacturer, importer, or employer demonstrates to OSHA that the execution of a confidentiality agreement would not provide sufficient protection against the potential harm from the unauthorized disclosure of a trade secret chemical identity, the Assistant Secretary may issue such orders or impose such additional limitations or conditions upon disclosure as may be appropriate to assure that the occupational health services are provided without an undue risk of harm to the chemical manufacturer, importer, or employer. It is contemplated that the Assistant Secretary would personally review and approve such orders, limitations or conditions. If the employer continues to withhold the requested information after a citation has been issued, the contested citation will go to the Occupational Safety

and Health Review Commission (OSHRC) for adjudication.

In accordance with OSHRC rules, The Administrative Law Judge (ALJ) from OSHRC may decide to review the matter *in camera.* At all stages of the proceeding, the normal OSHRC and judicial review procedures will be followed.

As a further clarification of the disclosure requirements of the final standard, the provisions specifically exclude trade secret processes or percentage of mixture information from disclosure. This is the type of information which is most likely to be trade secret and least likely to be of medical or occupational health interest. OSHA recognizes that, in rare cases, process information (such as where an intermediate hazardous chemical is not present in the final product) or even percentage of mixture information (such as for antidote treatment) may be necessary in an emergency situation. OSHA believes that responsible chemical manufacturers, importers, or employers will appropriately respond to such emergencies. Thus such information was not included in the concept of specific chemical identity.

The chemical manufacturer, importer or employer is required to divulge to the Assistant Secretary or designee any information required under this standard. However, the chemical manufacturer, importer, or employer may claim trade secret status at the time the information is provided, and the Assistant Secretary will make the necessary arrangements to ensure protection of such trade secrets, in accordance with the provisions of 53340 section 15 of the Act and Agency procedures.

(j) *Effective dates.* The effective dates of the final standard are structured according to activity; that is, information being sent downstream must be prepared first, then other provisions of the hazard communication programs are to be complied with by a later date. Chemi-

cal manufacturers and importers have two years in which to comply with the labeling of containers shipped downstream, and to provide material safety data sheets to manufacturing purchasers. Distributors must also begin transferring information downstream by this initial compliance date. All employers must be in compliance with all provisions of the standard within 2½ years.

V. Authority, Signature and the Standard

This document was prepared under the direction of Thorne G. Auchter, Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, 200 Constitutional Avenue, N.W., Washington, D.C. 20210. Pursuant to Sections 6(b) and 8(g) of the Act, 29 CFR is hereby amended by adding a new § 1910.1200 to read as set forth below.

List of Subjects in 29 CFR Part 1910

Occupational safety and health, Hazard communication.

(Sec. 6(b), 8(c), and 8(g), Pub. L. 91-596, 84 Stat. 1593, 1599, 1600; 29 U.S.C. 655, 657; 29 CFR Part 1911; Secretary of Labor's Order No. 9-83 (48 FR 35736))

Signed at Washington, D.C. this 21st day of November 1983.

Thorne G. Auchter,

Assistant Secretary for Occupational Safety and Health.

Part 1910—[Amended]

Subpart 2 of Part 1910 of Title 29 of the Code of Federal Regulations (CFR) is hereby amended by adding a new § 1910.1200 to read as follows:

§ 1910.1200 Hazard communication.

(a) *Purpose.* (1) The purpose of this section is to ensure that the hazards of all chemicals produced or im-

ported by chemical manufacturers or importers are evaluated, and that information concerning their hazards is transmitted to affected employers and employees within the manufacturing sector. This transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, material safety data sheets and employee training.

(2) This occupational safety and health standard is intended to address comprehensively the issue of evaluating and communicating chemical hazards to employees in the manufacturing sector, and to preempt any state law pertaining to this subject. Any state which desires to assume responsibility in this area may only do so under the provisions of § 18 of the Occupational Safety and Health Act (29 U.S.C. 651 et seq.) which deals with state jurisdiction and state plans.

(b) *Scope and application.* (1) This section requires chemical manufacturers or importers to assess the hazards of chemicals which they produce or import, and all employers in SIC Codes 20 through 39 (Division D, Standard Industrial Classification Manual) to provide information to their employees about the hazardous chemicals to which they are exposed, by means of a hazard communication program, labels and other forms of warning, material safety data sheets, and information and training. In addition, this section requires distributors to transmit the required information to employers in SIC Codes 20-39.

(2) This section applies to any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.

(3) This section applies to laboratories only as follows:

(i) Employers shall ensure that labels or incoming containers of hazardous chemicals are not removed or defaced;

(ii) Employers shall maintain any material safety data sheets that are received with incoming shipments of hazardous chemicals, and ensure that they are readily accessible to laboratory employees; and,

(iii) Employers shall ensure that laboratory employees are apprised of the hazards of the chemicals in their workplaces in accordance with paragraph (h) of this section.

(4) This section does not require labeling of the following chemicals:

(i) Any pesticide as such term is defined in the Federal Insecticide, Fungicide, and Rodentcide Act (7 U.S.C. 136 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;

(ii) Any food, food additive, color additive, drug, or cosmetic, including materials intended for use as ingredients in such products (e.g., flavors and fragrances), as such terms are defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 et seq.) and regulations issued under that Act, when they are subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Food and Drug Administration;

(iii) Any distilled spirits (beverage alcohols), wine, or malt beverages intended for nonindustrial use, as such terms are defined in the Federal Alcohol Administration Act (27 U.S.C. 201 et seq.) and regulations issued under that Act, when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Bureau of Alcohol, Tobacco, and Firearms; and,

(iv) Any consumer product or hazardous substance as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) respectively, when subject to a consumer product safety standard or labeling

requirement of those Acts, regulations issued under those Acts by the Consumer Product Safety Commission.

(5) This section does not apply to:

(i) Any hazardous waste as such term is defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 as amended (42 U.S.C. 6901 et seq.), when subject to regulations issued under that Act by the Environmental Protection Agency;

(ii) Tobacco or tobacco products;

(iii) Wood or wood products;

(iv) Articles; and,

(v) Foods, drugs, or cosmetics intended for personal consumption by employees while in the workplace.

(c) *Definitions.* "Article" means a manufactured item; (i) Which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which does not release, or otherwise result in exposure to, a hazardous chemical under normal conditions of use.

"Assistant Secretary" means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

"Chemical" means any element, chemical compound or mixture of elements and/or compounds.

"Chemical manufacturer" means an employer in SIC Codes 20 through 39 with a workplace where chemical(s) are produced for use or distribution.

"Chemical name" means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) 53341 rules of nomenclature, or a name which will

clearly identify the chemical for the purpose of conducting a hazard evaluation.

"Combustible liquid" means any liquid having a flashpoint at or above 100°F (37.8°C), but below 200°F (93.3°C), except any mixture having components with flashpoints of 200°F (93.3°C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

"Common name" means any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.

"Compressed gas" means:

(i) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70°F (21.1°C); or

(ii) A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130°F (54.4°C) regardless of the pressure at 70°F (21.1°C); or

(iii) A liquid having a vapor pressure exceeding 40 psi at 100°F (37.8°C) as determined by ASTM D-323-72.

"Container" means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems are not considered to be containers.

"Designated representative" means any individual or organization to whom an employee gives written authorization to exercise such employee's rights under this section. A recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written employee authorization.

"Director" means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

"Distributor" means a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to manufacturing purchasers.

"Employee" means a worker employed by an employer in a workplace in SIC Codes 20 through 39 who may be exposed to hazardous chemicals under normal operating conditions or foreseeable emergencies, including, but not limited to production workers, line supervisors, and repair or maintenance personnel. Office workers, grounds maintenance personnal, security personnel or non-resident management are generally not included, unless their job performance routinely involves potential exposure to hazardous chemicals.

"Employer" means a person engaged in a business within SIC Codes 20 through 39 where chemicals are either used, or are produced for use or distribution.

"Explosive" means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

"Exposure" or "exposed" means that an employee is subjected to a hazardous chemical in the course of employment through any route of entry (inhalation, ingestion, skin contact or absorption, etc.), and includes potential (e.g., accidental or possible) exposure.

"Flammable" means a chemical that falls into one of the following categories:

(i) "Aerosol, flammable" means an aerosol that, when tested by the method described in 16 CFR 1500.45, yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening;

(ii) "Gas, flammable" means:

(A) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen (13) percent by volume or less; or

(B) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve (12) percent by volume, regardless of the lower limit;

(iii) "Liquid, flammable" means any liquid having a flashpoint below 100°F (37.8°C), except any mixture having components with flashpoints of 100°F (37.8°C) or higher, the total of which make up 99 percent or more of the total volume of the mixture.

(iv) "Solid, flammable" means a solid, other than a blasting agent or explosive as defined in § 1910.109(a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be a flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

"Flashpoint" means the minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested as follows:

(i) Tagliabue Closed Tester (See American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24-1979 (ASTM D 56-79)) for liquids with a viscosity of less than 45 Saybolt Universal Seconds (SUS) at 100°F (37.8°C), that do not contain suspended solids and do not have a tendency to form a surface film under test; or

(ii) Pensky-Martens Closed Tester (see American National Standard Method of Test for Flash Point by Pensky-

Martens Closed Tester, Z11.7-1979 (ASTM D 93-79)) for liquids with a viscosity equal to or greater than 45 SUS at 100°F (37.8°C), or that contain suspended solids, or that have a tendency to form a surface film under test; or

(iii) Setaflash Closed Tester (see American National Standard Method of Test for Flash Point by Setaflash Closed Tester (ASTM D 3278-78)).

Organic peroxides, which undergo autoaccelerating thermal decomposition, are excluded from any of the flash-point determination methods specified above.

"Foreseeable emergency" means any potential occurrence such as, but not limited to equipment failure, rupture of containers, or failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.

"Hazard warning" means any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the hazards of the chemical(s) in the container(s).

"Hazardous chemical" means any chemical which is a physical hazard or a health hazard.

"Health hazard" means a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes. Appendix A provides further definitions and explanations of the scope of health hazards covered by this section, and Appendix B describes the criteria to be used to determine whether or not a chemical is to be considered hazardous for purposes of this standard.

"Identity" means any chemical or common name which is indicated on the material safety data sheet (MSDS) for the chemical. The identity used shall permit cross-references to be made 53342 among the required list of hazardous chemicals, the label and the MSDS.

"Immediate use" means that the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

"Importer" means the first business with employees within the Customs Territory of the United States which receives hazardous chemicals produced in other countries for the purpose of supplying them to distributors or manufacturing purchasers within the United States.

"Label" means any written, printed, or graphic material displayed on or affixed to containers of hazardous chemicals.

"Manufacturing purchaser" means an employer with a workplace classified in SIC Codes 20 through 39 who purchases a hazardous chemical for use within that workplace.

"Material safety data sheet (MSDS)" means written or printed material concerning a hazardous chemical which is prepared in accordance with paragraph (g) of this section.

"Mixture" means any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.

"Organic peroxide" means an organic compound that contains the bivalent -O- O-structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

"Oxidizer" means a chemical other than a blasting agent or explosive as defined in § 1910.109(a), that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

"Physical hazard" means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

"Produce" means to manufacture, process, formulate, or repackage.

"Pyrophoric" means a chemical that will ignite spontaneously in air at a temperature of 130° F (54.5° C) or below.

"Responsible party" means someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

"Specific chemical identity" means the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other inofrmation that reveals the precise chemical designation of the substance.

"Trade secret" means any confidential formula, pattern, process, device, information or compilation of information (including chemical name or other unique chemical identifier) that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it.

"Unstable (reactive)" means a chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks pressure or temperature.

"Use" means to package, handle, react, or transfer.

"Water-reactive" means a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

"Work area" means a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

"Workplace" means an establishment at one geographical location containing one or more work areas.

(d) *Hazard determination.* (1) Chemical manufacturers and importers shall evaluate chemicals produced in their workplaces or imported by them to determine if they are hazardous. Employers are not required to evaluate chemicals unless they choose not to rely on the evaluation performed by the chemical manufacturer or importer for the chemical to satisfy this requirement.

(2) Chemical manufacturers, importers or employers evaluating chemicals shall identify and consider the available scientific evidence concerning such hazards. For health hazards, evidence which is statistically significant and which is based on at least one positive study conducted in accordance with established scientific principles is considered to be sufficient to establish a hazardous effect if the results of the study meet the definitions of health hazards in this section. Appendix A shall be consulted for the scope of health hazards covered, and Appendix B shall be consulted for the criteria to be followed with respect to the completeness of the evaluation, and the data to be reported.

(3) The chemical manufacturer, importer or employer evaluating chemicals shall treat the following sources as establishing that the chemicals listed in them are hazardous:

(i) 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA); or,

(ii) *Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment*, American Conference of Government Industrial Hygienists (ACGIH) (latest edition).

The chemical manufacturer, importer, employer is still responsible for evaluating the hazards associated with the chemicals in these source lists in accordance with the requirements of the standard.

(4) Chemical manufacturers, importers and employers evaluating chemicals shall treat the following sources as establishing that a chemical is a carcinogen or potential carcinogen for hazard communication purposes:

(i) National Toxicology Program (NTP), *Annual Report on Carcinogens* (latest edition);

(ii) International Agency for Research on Cancer (IARC) *Monographs* (latest editions); or

(iii) 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration.

Note.—The *Registry of Toxic Effects of Chemical Substances* published by the National Institute for Occupational Safety and Health indicates whether a chemical has been found by NTP or IARC to be a potential carcinogen.

(5) The chemical manufacturer, importer or employer shall determine the hazards of mixtures of chemicals as follows:

(i) If a mixture has been tested as a whole to determine its hazards, the results of such testing shall be used to determine whether the mixture is hazardous;

(ii) If a mixture has not been tested as a whole to determine whether the mixture is a health hazard, the mixture shall be assumed to present the same health haz-

ards as do the components which comprise one percent (by weight or volume) or greater of the mixture, except that the mixture shall be assumed to present a carcinogenic hazard if it contains a component in concentrations of 0.1 percent or greater which is considered to be a carcinogen under paragraph (d)(4) of this section;

(iii) If a mixture has not been tested as a whole to determine whether the mixture is a physical hazard, the chemical manufacturer, importer, or employer may use whatever scientifically valid data is available to evaluate the physical hazard potential of the mixture; and

(iv) If the employer has evidence to indicate that a component present in the mixture in concentrations of less than 53343 one percent (or in the case of carcinogens, less than 0.1 percent) could be released in concentrations which would exceed an established OSHA permissible exposure limit or ACGIH Threshold Limit Value, or could present a health hazard to employees in those concentrations, the mixture shall be assumed to present the same hazard.

(6) Chemical manufacturers, importers, or employers or employers evaluating chemicals shall describe in writing the procedures they use to determine the hazards of the chemical they evaluate. The written procedures are to be made available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director. The written description may be incorporated into the written hazard communication program required under paragraph (e) of this section.

(e) *Written hazard communication program.* (1) Employers shall develop and implement a written hazard communication program for their workplaces which at least describes how the criteria specified in paragraphs (f), (g), and (h) of this section for labels and other forms of warning, material safety data sheets, and employee in-

formation and training will be met, and which also includes the following:

(i) A list of the hazardous chemicals known to be present using an identity that is referenced on the appropriate material safety data sheet (the list may be compiled for the workplace as a whole or for individual work areas);

(ii) The methods the employer will use to inform employees of the hazards of non-routine tasks (for example, the cleaning of reactor vessels), and the hazards associated with chemicals contained in unlabeled pipes in their work areas; and,

(iii) The methods the employer will use to inform any contractor employers with employees working in the employer's workplace of the hazardous chemicals their employees may be exposed to while performing their work, and any suggestions for appropriate protective measures.

(2) The employer may rely on an existing hazard communication program to comply with these requirements, provided that it meets the criteria established in this paragraph (e).

(3) The employer shall make the written hazard communication program available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director, in accordance with the requirements of 29 CFR 1910.20(e).

(f) *Labels and other forms of warning.* (1) The chemical manufacturer, importer, or distributor shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged or marked with the following information:

(i) Identity of the hazardous chemical(s):

(ii) Appropriate hazard warnings; and

(iii) Name and address of the chemical manufacturer, importer, or other responsible party.

(2) Chemical manufacturers, importers, or distributors shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged, or marked in accordance with this section in a manner which does not conflict with the requirements of the Hazardous Materials Transportation Act (18 U.S.C. 1801 et seq.) and regulations issued under that Act by the Department of Transportation.

(3) If the hazardous chemical is regulated by OSHA in a substance-specific health standard, the chemical manufacturer, importer, distributor or employer shall ensure that the labels or other forms of warning used are in accordance with the requirements of that standard.

(4) Except as provided in paragraphs (f)(5) and (f)(6) the employer shall ensure that each container of hazardous chemicals in the workplace is labeled, tagged, or marked with the following information:

(i) Identity of the hazardous chemical(s) contained therein; and

(ii) Appropriate hazard warnings.

(5) The employer may use signs, placards, process sheets, batch tickets, operating procedures, or other such written materials in lieu of affixing labels to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable and conveys the information required by paragraph (f)(4) of this section to be on a label. The written materials shall be readily accessible to the employees in their work area throughout each work shift.

(6) The employer is not required to label portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for

the immediate use of the employee who performs the transfer.

(7) The employer shall not remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information.

(8) The employer shall ensure that labels or other forms of warning are legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift. Employers having employees who speak other languages may add the information in their language to the material presented, as long as the information is presented in English as well.

(9) The chemical manufacturer, importer, distributor or employer need not affix new labels to comply with this section if existing labels already convey the required information.

(g) *Material safety data sheets.* (1) Chemical manufacturers and importers shall obtain or develop a material safety data sheet for each hazardous chemical they produce or import. Employers shall have a material safety data sheet for each hazardous chemical which they use.

(2) Each material safety data sheet shall be in English and shall contain at least the following information:

(i) The identity used on the label, and, except as provided for in paragraph (f) of this section on trade secrets:

(A) If the hazardous chemical is a single substance, its chemical and common name(s);

(B) If the hazardous chemical is a mixture which has been tested as a whole to determine its hazards, the chemical and common name(s) of the ingredients which contribute to these known hazards, and the common name(s) of the mixture itself; or,

(C) If the hazardous chemical is a mixture which has not been tested as a whole;

(*1*) The chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise 1% or greater of the composition, except that chemicals identified as carcinogens under paragraph (d)(4) of this section shall be listed if the concentrations are 0.1% or greater; and,

(*2*) The chemical and common name(s) of all ingredients which have been determined to present a physical hazard when present in the mixture;

(ii) Physical and chemical characteristics of the hazardous chemical (such as vapor pressure, flash point);

(iii) The physical hazards of the hazardous chemical, including the potential for fire, explosion, and reactivity;

(iv) The health hazards of the hazardous chemical, including signs and symptoms of exposure, and any medical conditions which are generally recognized as being aggravated by exposure to the chemical;

(v) The primary route(s) of entry;

(vi) The OSHA permissible exposure limit, ACGIH Thereshold Limit Value, and any other exposure limit used or 53344 recommended by the chemical manufacturer, importer, or employer preparing the material safety data sheet, where available;

(vii) Whether the hazardous chemical is listed in the National Toxicology Program (NTP) *Annual Report on Carcinogens* (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) *Monographs* (latest editions), or by OSHA;

(viii) Any generally applicable precautions for safe handling and use which are known to the chemical manufacturer, importer or employer preparing the material

safety data sheet, including appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for clean-up of spills and leaks;

(ix) Any generally applicable control measures which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, such as appropriate engineering controls, work practices, or personal protective equipment;

(x) Emergency and first aid procedures;

(xi) The date of preparation of the material safety data sheet or the last change to it; and,

(xii) The name, address and telephone number of the chemical manufacturer, importer, employer or other responsible party preparing or distributing the material safety data sheet, who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

(3) If no relevant information is found for any given category on the material safety data sheet, the chemical manufacturer, importer or employer preparing the material safety data sheet shall mark it to indicate that no applicable information was found.

(4) Where complex mixtures have similar hazards and contents (i.e. the chemical ingredients are essentially the same, but the specific composition varies from mixture to mixture), the chemical manufacturer, importer, or employer may prepare one material safety data sheet to apply to all of these similar mixtures.

(5) The chemical manufacturer, importer or employer preparing the material safety data sheet shall ensure that the information recorded accurately reflects the scientific evidence used in making the hazard determination. If the chemical manufacturer, importer or employer becomes newly aware of any significant information regarding the

hazards of a chemical, or ways to protect against the hazards, this new information shall be added to the material safety data sheet within three months. If the chemical is not currently being produced or imported the chemical manufacturer or importer shall add the information to the material safety data sheet before the chemical is introduced into the workplace again.

(6) Chemical manufacturers or importers shall ensure that all distributors and manufacturing purchasers of hazardous chemicals are provided an appropriate material safety data sheet with their initial shipment, and with the first shipment after a material safety data sheet is updated. The chemical manufacturer or importer shall either provide material safety data sheets with the shipped containers or send them to the manufacturing purchaser prior to or at the time of the shipment. If the material safety data sheet is not provided with the shipment, the manufacturing purchaser shall obtain one from the chemical manufacturer, importer, or distributor as soon as possible.

(7) Distributors shall ensure that material safety data sheets, and updated information, are provided to other distributors and manufacturing purchasers of hazardous chemicals.

(8) The employer shall maintain copies of the required material safety data sheets for each hazardous chemical in the workplace, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s).

(9) Material safety data sheets may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the required information is provided for each hazardous chem-

ical, and is readily acessible during each work shift to employees when they are in their work area(s).

(10) Material safety data sheets shall also be made readily available, upon request, to designated representatives and to the Assistant Secretary, in accordance with the requirements of 29 CFR 1910.20(e). The Director shall also be given access to material safety data sheets in the same manner.

(h) *Employee information and training.* Employers shall provide employees with information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new hazard is introduced into their work area.

(1) *Information.* Employees shall be informed of:

(i) The requirements of this section;

(ii) Any operations in their work area where hazardous chemicals are present; and,

(iii) The location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and material safety data sheets required by this section.

(2) *Training.* Employee training shall include at least:

(i) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);

(ii) The physical and health hazards of the chemicals in the work area;

(iii) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees

from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,

(iv) The details of the hazard communication program developed by the employer, including an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information.

(i) *Trade secrets.* (1) The chemical manufacturer, importer or employer may withhold the specific chemical identity, including the chemical name and other specific identification of a hazardous chemical, from the material safety data sheet, provided that:

(i) The claim that the information withheld in a trade secret can be supported;

(ii) Information contained in the material safety data sheet concerning the properties and effects of the hazardous chemical is disclosed;

(iii) The material safety data sheet indicates that the specific chemical identity is being withheld as a trade secret; and,

(iv) The specific chemical identity is made available to health professionals, in accordance with the applicable provisions of this paragraph.

(2) Where a treating physician or nurse determines that a medical emergency exists and the specific chemical identity of a hazardous chemical is necessary for emergency or first-aid treatment, the chemical 53345 manufacturer, importer, or employer shall immediately disclose the specific chemical identity of a trade secret chemical so that treating physician or nurse, regardless of the existence of a written statement of need or a confidentiality agreement. The chemical manufacturers, importer, or employer may require a written statement of need and confidentiality agreement, in accordance with the provisions

of paragraphs (i)(3) and (4) of this section, as soon as circumstances permit.

(3) In non-emergency situations, a chemical manufacturer, importer, or employer shall, upon request, disclose a specific chemical identity, otherwise permitted to be withheld under paragraph (i)(1) of this section, to a health professional (i.e. physician, industrial hygienist, toxicologist, or epidemiologist) providing medical or other occupational health services to exposed employee(s) if:

(i) the request is in writing;

(ii) The request describes with reasonable detail one or more of the following occupational health needs for the information:

(A) To assess the hazards of the chemicals to which employees will be exposed;

(B) To conduct or assess sampling of the workplace atmosphere to determine employee exposure levels;

(C) To conduct pre-assignment or periodic medical surveillance of exposed employees;

(D) To provide medical treatment to exposed employees;

(E) To select or assess appropriate personal protective equipment for exposed employees;

(F) To design or assess engineering controls or other protective measures for exposed employees; and,

(G) To conduct studies to determine the health effects of exposure.

(iii) The request explains in detail why the disclosure of the specific chemical identity is essential and that, in lieu thereof, the disclosure of the following information would not enable the health professional to provide the occupational health services described in paragraph (ii) of this section:

(A) The properties and effects of the chemical;

(B) Measures for controlling workers' exposure to the chemical;

(C) Methods of monitoring and analyzing worker exposure to the chemical; and

(D) Methods of diagnosing and treating harmful exposures to the chemical;

(iv) The request includes a description of the procedures to be used to maintain the confidentiality of the disclosed information; and,

(v) The health professional, and the employer or contractor of the health professional's services (i.e., downstream employer, labor organization, or individual employer), agree in a written confidentiality agreement that the health professional will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to OSHA, as provided in paragraph (i)(6) of this section, except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.

(4) The confidentiality agreement authorized by paragraph (i)(3)(iv) of this section:

(i) May restrict the use of the information to the health purposes indicated in the written statement of need;

(ii) May provide for appropriate legal remedies in the event of a breach of the agreement, including stipulation of a reasonable pre-estimate of likely damages; and,

(iii) May not include requirements for the posting of a penalty bond.

(5) Nothing in this standard is meant to preclude the parties from pursuing non-contractual remedies to the extent permitted by law.

(6) If the health professional receiving the trade secret information decides that there is a need to disclose it to OSHA, the chemical manufacturer, importer, or employer who provided the information shall be informed by the health professional prior to, or at the same time as, such disclosure.

(7) If the chemical manufacturer, importer, or employer denies a written request for disclosure of a specific chemical identity, the denial must:

(i) Be provided to the health professional within thirty days of the request;

(ii) Be in writing;

(iii) Include evidence to support the claim that the specific chemical identity is a trade secret;

(iv) State the specific reasons why the request is being denied; and,

(v) Explain in detail how alternative information may satisfy the specific medical or occupational health need without revealing the specific chemical identity.

(8) The health professional whose request for information is denied under paragraph (i)(3) of this section may refer the request and the written denial of the request to OSHA for consideration.

(9) When a health professional refers the denial to OSHA under paragraph (i)(8) of this section, OSHA shall consider the evidence to determine if:

(i) The chemical manufacturer, importer, or employer has supported the claim that the specific chemical identity is a trade secret;

(ii) The health professional has supported the claim that there is a medical or occupational health need for the information; and,

(iii) The health professional has demonstrated adequate means to protect the confidentiality.

(10) (i) If OSHA determines that the specific chemical identity requested under paragraph (i) (3) of this section is not a *bona fide* trade secret, or that it is a trade secret but the requesting health professional has a legitimate medical or occupational health need for the information, has executed a written confidentiality agreement, and has shown adequate means to protect the confidentiality of the information, the chemical manufacturer, importer, or employer will be subject to citation by OSHA.

(ii) If a chemical manufacturer, importer, or employer demonstrates to OSHA that the execution of a confidentiality agreement would not provide sufficient protection against the potential harm from the unauthorized disclosure of a trade secret specific chemical identity, the Assistant Secretary may issue such orders or impose such additional limitations or conditions upon the disclosure of the requested chemical information as may be appropriate to assure that the occupational health services are provided without an undue risk of harm to the chemical manufacturer, importer, or employer.

(11) If, following the issuance of a citation and any protective orders, the chemical manufacturer, importer, or employer continues to withhold the information, the matter is referrable to the Occupational Safety and Health Review Commission for enforcement of the citation. In accordance with Commission rules, the Administrative Law Judge may review the citation and supporting documentation *in camera* or issue appropriate protective orders.

(12) Notwithstanding the existence of a trade secret claim, a chemical manufacturer, importer, or employer shall, upon request, disclose to the Assistant Secretary any information which this section requires the chemical manufacturer, importer, or employer to make available. Where there is a trade secret claim, such claim shall be made no later than at the time the information is provided to the Assistant Secretary so that suitable determinations of trade 53346 secret status can be made and the necessary protections can be implemented.

(13) Nothing in this paragraph shall be construed as requiring the disclosure under any circumstances of process or percentage of mixture information which is trade secret.

(j) *Effective dates.* Employers shall be in compliance with this section within the following time periods:

(1) Chemical manufacturers and importers shall label containers of hazardous chemicals leaving their workplaces, and provide material safety data sheets with initial shipments by November 25, 1985.

(2) Distributors shall be in compliance with all provisions of this section applicable to them by November 25, 1985.

(3) Employers shall be in compliance with all provisions of this section by May 25, 1986, including initial training for all current employees.

Appendix A to § 1910.1200—Health Hazard Definitions (Mandatory)

Although safety hazards related to the physical characteristics of a chemical can be objectively defined in terms of testing requirements (e.g. flammability), health hazard definitions are less precise and more subjective. Health hazards may cause measurable changes in the body—such as decreased pulmonary function. These changes are generally indicated by the occurrence of

signs and symptoms in the exposed employees—such as shortness of breath, a non-measurable, subjective feeling. Employees exposed to such hazards must be apprised of both the change in body function and the signs and symptoms that may occur to signal that change.

The determination of occupational health hazards is complicated by the fact that many of the effects or signs and symptoms occur commonly in non-occupationally exposed populations, so that effects of exposure are difficult to separate from normally occurring illnesses. Occasionally, a substance causes an effect that is rarely seen in the population at large, such as angiosarcomas caused by vinyl chloride exposure, thus making it easier to ascertain that the occupational exposure was the primary causative factor. More often, however, the effects are common, such as lung cancer. The situation is further complicated by the fact that most chemicals have not been adequately tested to determine their health hazard potential, and data do not exist to substantiate these effects.

There have been many attempts to categorize effects and to define them in various ways. Generally, the terms "acute" and "chronic" are used to delineate between effects on the basis of severity or duration. "Acute" effects usually occur rapidly as a result of short-term exposures, and are of short duration. "Chronic" effects generally occur as a result of long-term exposure, and are of long duration.

The acute effects referred to most frequently are those defined by the American National Standards Institute (ANSI) standard for Precautionary Labeling of Hazardous Industrial Chemicals (Z129.1-1982)—irritation, corrosivity, sensitization and lethal dose. Although these are important health effects, they do not adequately cover the considerable range of acute effects which may occur

as a result of occupational exposure, such as, for example, narcosis.

Similarly, the term chronic effect is often used to cover only carcinogenicity, teratogenicity, and mutagenicity. These effects are obvious a concern in the workplace, but again, do not adequately cover the area of chronic effects, excluding, for example, blood dyscrasias (such as anemia), chronic bronchitis and liver atrophy.

The goal of defining precisely, in measurable terms, every possible health effect that may occur in the workplace as a result of chemical exposures cannot realistically be accomplished. This does not negate the need for employees to be informed of such effects and protected from them.

Appendix B, which is also mandatory, outlines the principles and procedures of hazard assessment.

For purposes of this section, any chemicals which meet any of the following definitions, as determined by the criteria set forth in Appendix B are health hazards:

1. *Carcinogen:* A chemical is considered to be a carcinogen if:

(a) It has been evaluated by the International Agency for Research on Cancer (IARC), and found to be a carcinogen or potential carcinogen; or

(b) It is listed as a carcinogen or potential carcinogen in the *Annual Report on Carcinogens* published by the National Toxicology Program (NTP) (latest edition); or,

(c) It is regulated by OSHA as a carcinogen.

2. *Corrosive:* A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. For example, a chemical is considered to be corrosive if, when tested on the intact skin of albino rabbits by the method described by the U.S. Department of Transportation in Appendix

A to 49 CFR Part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of four hours. The term shall not refer to action on inanimate surfaces.

3. *Highly toxic:* A chemical falling within any of the following categories:

(a) A chemical that has a median lethal dose (LD_{50}) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

(b) A chemical that has a median leathl dose (LD_{50}) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.

(c) A chemical that has a median lethal concentration (LC_{50}) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

4. *Irritant:* A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of 16 CFR 1500.41 for four hours exposure or by other appropriate techniques, it results in an empirical score of five or more. A chemical is an eye irritant if so determined under the procedure listed in 16 CFR 1500.42 or other appropriate techniques.

5. *Sensitizer:* A chemical that causes a substantial proportion of exposed people or animals to develop an

allergic reaction in normal tissue after repeated exposure to the chemical.

6. *Toxic:* A chemical falling within any of the following categories:

(a) A chemical that has a median lethal dose (LD_{50}) or more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

(b) A chemical that has a median lethal dose (LD_{50}) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.

(c) A chemical that has a median lethal concentration (LC_{50}) in air of 53347 more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than two milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

7. *Target organ effects.* The following is a target organ categorization of effects which may occur, including examples of signs and symptoms and chemicals which have been found to cause such effects. These examples are presented to illustrate the range and diversity of effects and hazards found in the workplace, and the broad scope employers must consider in this area, but are not intended to be all-inclusive.

a. Hepatotoxins	Chemicals which produce liver damage.
Signs and Symptoms	Jaundice; liver enlargement.
Chemicals	Carbon tetrachloride, nitrosamines.
b. Nephrotoxins	Chemicals which produce kidney damage.
Signs and Symptoms	Edema, proteinuria.
Chemicals	Halogenated hydrocarbons, uranium.
c. Neurotoxins	Chemicals which produce their primary toxic effects on the nervous system.
Signs and Symptoms	Narcosis; behavioral changes; decrease in motor functions.
Chemicals	Mercury, carbon disulfide.
d. Agents which act on the blood or hematopoietic system	Decrease hemoglobin function; deprive the body tissues of oxygen.
Signs and Symptoms	Cyanosis; loss of consciousness.
Chemicals	Carbon monoxide; cyanides.
e. Agents which damage the lung	Chemicals which irritate or damage the pulmonary tissue.
Signs and Symptoms	Cough; tightness in chest, shortness of breath.
Chemicals	Silica; asbestos.
f. Reproductive toxins	Chemicals which affect the reproductive capabilities including chromosomal damages (mutations) and effects on fetuses (teratogenesis).
Signs and Symptoms	Birth defects; sterility.
Chemicals	Lead; DBCP.
g. Cutaneous hazards	Chemical which affect the dermal layer of the body.
Signs and Symptoms	Defatting of the skin; rashes, irritation.
Chemicals	Ketones, chlorinated compounds.
h. Eye hazards	Chemicals which affect the eye or visual capacity.
Signs and Symptoms	Conjunctivitis; corneal damage
Chemicals	Organic solvents; acids.

Appendix B to § 1900.1200—Hazard Determination (Mandatory)

The quality of a hazard communication program is largely dependent upon the adequacy and accuracy of the hazard determination. The hazard determination requirement of this standard is performance-oriented. Chemical manufacturers, importers, and employers evaluating chemicals are not required to follow any specific methods for determining hazards, but they must be able to demonstrate that they have adequately ascertained the hazards of the chemicals produced or imported in accordance with the criteria set forth in this Appendix.

Hazard evaluation is a process which relies heavily on the professional judgment of the evaluator, particularly in the area of chronic hazards. The performance-orientation of the hazard determination does diminish the duty of the chemical manufacturer, importer or employer to conduct a thorough evaluation, examining all relevant data and producing a scientifically defensible evaluation. For purposes of this standard, the following criteria shall be used in making hazard determinations that meet the requirements of this standard.

1. *Carcinogenicity*: As described in paragraph (d)(4) and Appendix A of this section, a determination by the National Toxicology Program, the International Agency for Research on Cancer, or OSHA that a chemical is a carcinogen or potential carcinogen will be considered conclusive evidence for purposes of this section.

2. *Human data:* Where available, epidemiological studies and case reports of adverse health effects shall be considered in the evaluation.

3. *Animal data:* Human evidence of health effects in exposed populations is generally not available for the majority of chemicals produced or used in the workplace. Therefore, the available results of toxicological testing in animal populations shall be used to predict the health

effects that may be experienced by exposed workers. In particular, the definitions of certain acute hazards refer to specific animal testing results (see Appendix A).

4. *Adequacy and reporting of data:* The results of any studies which are designed and conducted according to established scientific principles, and which report statistically significant conclusions regarding the health effects of a chemical, shall be a sufficient basis for a hazard determination and reported on any material safety data sheet. The chemical manufacturer, importer, or employer may also report the results of other scientifically valid studies which tend to refute the findings of hazard.

Appendix C to § 1900.1200—Information Sources (Advisory)

The following is a list of available data sources which the chemical manufacturer, importer, or employer may wish to consult to evaluate the hazards of chemicals they produce or import:

—Any information in their own company files such as toxicity testing results or illness experience of company employees.

—Any information obtained from the supplier of the chemical, such as material safety data sheets or product safety bulletins.

—Any pertinent information obtained from the following source list (latest editions should be used):

Condensed Chemical Dictionary

Van Nostrand Reinhold Co., 135 West 50th Street, New York, NY 10020

The Merck Index: An Encyclopedia of Chemicals and Drugs

Merck and Company, Inc., 126 E. Lincoln Avenue, Rahway, NJ 07065

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man

Geneva: World Health Organization, International Agency for Research on Cancer, 1972-1977. (Multivolume work), 49 Sheridan Street, Albany, New York

Industrial Hygiene and Toxicology, by F. A. Patty

John Wiley & Sons, Inc., New York, NY (Five volumes)

Clinical Toxicology of Commercial Products

Gleason, Gosselin and Hodge

Casarett and Doull's Toxicology: The Basic Science of Poisons

Doull, Klaassen, and Amdur, Macmillan Publishing Co., Inc., New York, NY

Industrial Toxicology, by Alice Hamilton and Harriet L. Hardy

Publishing Sciences Group, Inc., Acton, MA

Toxicology of the Eye, by W. Morton Grant

Charles C. Thomas, 301-327 East Lawrence Avenue, Springfield, IL

Recognition of Health Hazards in Industry

William A. Burgess, John Wiley and Sons, 605 Third Avenue, New York, NY 10158

Chemical Hazards of the Workplace

Nick H. Proctor and James P. Hughes, J. P. Lipincott Company, 6 Winchester Terrace, New York, NY 10022

Handbook of Chemistry and Physics

Chemical Rubber Company, 18901 Cranwood Parkway, Cleveland, OH 44128

Threshold Limit Values for Chemical Substances and Physical Agents in the Workroom Environment with Intended Changes

American Conference of Governmental Industrial Hygienists, 6500 Glenway Avenue, Bldg. D-5, Cincinnati, OH 45211

Note—The following documents are on sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

53348 *Occupational Health Guidelines*

NIOSH/OSHA (NIOSH Pub. No. 8-123)

NIOSHA/OSHA Pocket Guide to Chemical Hazards

NIOSH Pub. No. 78-210

Registry of Toxic Effects of Chemical Substances

U.S. Department of Health and Human Services, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health (NIOSH Pub. No. 80-102)

The Industrial Environment—Its Evaluation and Control

U.S. Department of Health and Human Services, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health (NIOSH Pub. No. 74-117)

Miscellaneous Documents—National Institute for Occupational Safety and Health

1. Criteria for a recommended standard * * * Occupational Exposure to "——"

2. Special Hazard Reviews

3. Occupational Hazard Assessment

4. Current Intelligence Bulletins

Bibliographic Data Bases

Service Provider and File Name

Bibliographic Retrieval Services (BRS), Corporation Park, Bldg. 702, Scotia, New York 12302

AGRICOLA
BIOSIS PREVIEWS
CA CONDENSATES
CA SEARCH
DRUG INFORMATION
MEDLARS
MEDOC
NTIS
POLLUTION ABSTRACTS
SCIENCE CITATION INDEX
SSIE

Lockheed—DIALOG, Lockheed Missiles & Space Company, Inc., P.O. Box 44481, San Francisco, CA 94144

AGRICOLA
BIOSIS PREV. 1972—PRESENT
BIOSIS PREV. 1969-71
CA CONDENSATES 1970-71
CA SEARCH 1972-76
CA SEARCH 1977—PRESENT
CHEMNAME
CONFERENCE PAPERS INDEX
FOOD SCIENCE & TECH. ABSTR.
FOODS ADLIBRA
INTL. PHARMACEUTICAL ABSTR.
NTIS
POLLUTION ABSTRACTS
SCISEARCH 1978—PRESENT
SCISEARCH 1974-77
SSIE CURRENT RESEARCH

SDC—ORBIT, SDC Search Service, Department No. 2230, Pasadena, CA 91051

AGRICOLA
BIOCODES
BIOSIS/BIO6973
CAS6771/CAS7276
CAS77
CHEMDEX
CONFERENCE
ENVIROLINE
LABORDOC
NTIS
POLLUTION
SSIE

Chemical Information System (CIS), Chemical Information Systems Inc., 7215 Yorke Road, Baltimore, MD 21212

Structure & Nomenclature Search System

Acute Toxicity (RTECS)

Clinical Toxicology of Commercial Products

Oil and Hazardous Materials Technical Assistance Data System

National Library of Medicine, Department of Health and Human Services, Public Health Service, National Institutes of Health, Bethesda, MD 20209

Toxicology Data Bank (TDB)

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Monday

August 24, 1987

Part III

DEPARTMENT OF LABOR

Occupational Safety and Health Administration

29 CFR Parts 1910, 1915, 1917, 1918, 1926, and 1928

Hazard Communication; Final Rule

Occupational Safety and Health Administration

29 CFR Parts 1910, 1915, 1917, 1918, 1926, and 1928

[Docket No. H-022D]

Hazard Communication

AGENCY: Occupational Safety and Health Administration (OSHA); Labor.

ACTION: Final rule.

SUMMARY: OSHA is revising its Hazard Communication Standard (HCS) (29 CFR 1910.1200), which currently applies to the manufacturing sector, to cover all employers with employees exposed to hazardous chemicals in their workplaces. Expansion of the scope of the HCS requires non-manufacturing employers to establish hazard communication programs to transmit information on the hazards of chemicals to their employees by means of labels on containers, material safety data sheets, and training programs. This action will reduce the incidence of chemically-related occupational illnesses and injuries in non-manufacturing workplaces.

DATES: Effective September 23, 1987. The revised standard published today requires that chemical manufacturers, importers, and distributors ensure that material safety data sheets are provided with the next shipment of hazardous chemicals to non-manufacturing employers or distributors after September 23, 1987. All employers in the non-manufacturing sector are to be in compliance with all provisions of the standard by May 23, 1988.

FOR FURTHER INFORMATION CONTACT: Mr. James F. Foster, Office of Information and Consumer Affairs, Occupational Safety and Health Administration, 200 Con-

stitution Avenue, NW., Room N3637, Washington, DC, 20210; telephone (202) 523-8151.

SUPPLEMENTARY INFORMATION: References to the rulemaking record are made in the text of this preamble, and the following abbreviations have been used:

H-022, Ex.: Exhibit number in Docket H-022, which includes Dockets H-022A and H-022B.

Ex.: Exhibit number in Docket H-022D for exhibits collected since the 1985 Court remand.

Tr.: Public hearing transcript page number.

Copies of the official list of entries in the record, as well as the exhibits themselves, are available from the OSHA Docket Office, Dockets H-022 and H-022D, Occupational Safety and Health Administration, 200 Constitution Avenue, NW., Room N3670, Washington, DC, 20210; telephone (202) 523-7894.

I. Background

A. *History of OSHA's Hazard Communication Standard*

When Congress passed the Occupational Safety and Health Act of 1970, 29 U.S.C. 651 *et seq.* (the Act), it included language in section 6(b)(7) stating that any occupational safety or health standard promulgated by the Secretary of Labor under section 6(b) rulemaking authority "shall prescribe the use of labels or other appropriate forms of warning as are necessary to insure that employees are apprised of all hazards to which they are exposed, relevant symptoms and appropriate emergency treatment, and proper conditions and precautions of safe use or exposure." Whenever OSHA has promulgated a substance-specific rule to address the hazards of a particular chemical, this Congressional directive has been followed. However, given the universe of chemicals present in American workplaces (as many as 575,000 hazardous chemical products), and the time-consuming nature of OSHA's rulemaking process, it soon became clear that little information would be available to em-

ployees if this substance by substance approach were the only one prusued. The Agency thus decided to address the issue of hazard information transmittal on a generic basis. OSHA's experience, as well as our rulemaking record to date, supports the view that when employees have access to, and understand, the nature of the chemical hazards they are exposed to during the course of their employment, they are better able to participate in their employers' protective programs, and take steps to protect themselves. In addition, providing employers with complete chemical hazard information enables them to better design and implement protective programs. Together these actions will result in more effective worker protection and the occurrence of fewer illnesses and injuries due to exposure to chemicals. *See, e.g.*, 48 FR 53828-84, 53321, 53323-24, 53327-29 (Nov. 25, 1983); 47 FR 12093-12101 (Mar. 19, 1982).

In 1974, OSHA established a Standards Advisory Committee on Hazardous Materials Labeling under section 7(b) of the Act to develop guidelines for the implementation of section 6(b)(7). On June 6, 1975, the Committee submitted its final report to the Assistant Secretary for Occupational Safety and Health which recommended categorization and ranking of chemical hazards, as well as provisions for labels, material safety data sheets, and training programs for all workers.

The National Institute for Occupational Safety and Health (NIOSH) published a criteria document in 1974 which also recommended a standard to OSHA. The document, entitled "A Recommended Standard . . . An Identification System for Occupationally Hazardous Materials," included provisions for labels and material safety data sheets.

In 1976, Congressman Andrew Maguire from New Jersey and the Health Research Group petitioned OSHA to issue a standard to require the labeling of all workplace chemicals. The House of Representatives' Committee on Government Operations (1976 and 1977) recom-

mended that OSHA enforce the health provisions of the Act by requiring manufacturers to disclose any toxic ingredients in their products, and by requiring all employers to disclose this information to workers.

On January 28, 1977, OSHA initiated the public participation phase of the rulemaking process on these issues by publishing an advance notice of proposed rulemaking (ANPR) on chemical labeling in the Federal Register (42 FR 5372). The ANPR requested comments and information on the need for such a standard, and the particular provisions that should be included. The Agency received eighty-one comments. Most supported the need for the rule, but opinions as to the specific approaches to be pursued varied significantly.

On January 16, 1981, OSHA published a notice of proposed rulemaking (NPRM) entitled "Hazards Identification" (46 FR 4412). The rule would have required manufacturing employers to assess the hazards in their workplaces using specified procedures, and to label containers. The requirements were quite different from the comprehensive approach previously recommended by the Standards Advisory Committee and NIOSH as they did not include provisions for material safety data sheet development or training.

OSHA withdrew the NPRM on February 12, 1981 (46 FR 12214) for further consideration of regulatory alternatives. A new NPRM was published on March 19, 1982, and was entitled "Hazard Communication" (47 FR 12092). It proposed to require producers of chemicals to evaluate them to determine their hazards, label 31853 containers, and provide safety data sheets to manufacturing purchasers of their products. The standard also proposed that all employers in the manufacturing sector have a hazard communication program, label in-plant containers, maintain and provide access to material safety data sheets, and train workers. The proposal also invited comments on whether non-manufacturing employers should be subject to the rule.

Following a period for written comments, informal public hearings, and a post-hearing comment period, OSHA published the final Hazard Communication Standard on November 25, 1983 (48 FR 53280). The provisions of the final rule are very similar to those described above for the proposal, *i.e.*, chemical manufacturers and importers are required to evaluate the hazards of the chemicals they produce or import, and all manufacturers are required to have hazard communication programs for their employees exposed to hazardous chemicals. This comprehensive standard was designed to reduce the hazards faced by manufacturing workers when they handle chemicals without adequate information on, among other things, the physical and health hazards of the chemicals, safe handling precautions, and emergency and first aid procedures. *See, e.g.*, 48 FR 53321. OSHA found that inadequate communication regarding chemical hazards presents a significant risk to workers. *See, e.g.*, 48 FR 53321. *Accord United Steelworkers of America v. Auchter*, 763 F.2d 728, 735 (3d cir. 1985) (*United Steelworkers I*) ("[I]nadequate communication is itself a hazard, which the standard can eliminate or mitigate.").

OSHA decided to limit the scope of coverage of the HCS to the manufacturing sector based on an analysis of the chemical source illnesses and injuries occurring in each industrial sector. (*See* discussion at 48 FR 53284-86). In particular, since the purpose of the standard is to reduce the occurrence of such incidents, OSHA determined that the rule should focus on those industrial sectors where they are recorded most frequently. The Agency found that over half of these incidents occur in manufacturing, although manufacturing accounts for only about 30 percent of total employment. Thus OSHA decided that the greatest need for transmittal of chemical hazard information is in the manufacturing sector. The Agency further recognized that since chemicals are developed and produced in the manufacturing sector, the hazard information would have to be developed in the manufacturing sec-

tor first, regardless of the eventual coverage of the rule. OSHA believed that requiring the development of the chemical hazard information in manufacturing would lead to its increased availability in the other sectors without the standard specifically requiring the transmittal of hazard information to those sectors. The Agency acknowledged that hazardous chemicals are pervasive throughout industry and that chemical souurce injuries and illnesses have been recorded in all industry sectors. *See, e.g.*, 48 FR 53282-87. *See also United Steelworkers I*, 763 F.2d at 737. The Agency planned to make a decision regarding the explicit coverage of the non-manufacturing sectors once the HCS was in effect, and a determination could be made as to whether the other industries were, in fact, obtaining the information they needed. OSHA believed that the Act gives the Secretary of Labor and the Agency the authority to regulate the most hazardous industry first under section 6(g)(29 U.S.C. 655(g), which states in part:

> In determining the priority for establishing standards under this section, the Secretary shall give due regard to the urgency of the need for mandatory safety and health standards for particular industries, trades, crafts, occupations, businesses, workplaces or work environments.

B. Court Challenges

The HCS was challenged in the U.S. Court of Appeals for the Third Circuit (hereinafter referred to as "the Court" or "the Third Circuit") on several grounds. The Court issued its decision on May 24, 1985 (*United Steelworkers I*, 763 F.2d 728 (3d Cir. 1985)). The standard was upheld in most respects, but three issues were remanded to the Agency for reconsideration. The decision was not appealed.

First, the Court concluded that the definition of trade secrets incorporated by OSHA included chemical identity information that was readily discoverable through re-

verse engineering and, therefore, was "broader than the protection afforded trade secrets by state law." The Court directed the Secretary of Labor to reconsider a trade secret definition which would not include chemical identity information that is readily discoverable through reverse engineering. Second, the Court held the trade secret access rule in the standard invalid insofar as it limited access to health professionals, but found the access rule otherwise valid. The Secretary was directed to adopt a rule permitting access by employees and their collective bargaining representatives to trade secret chemical identities. OSHA complied with the Court orders regarding the two trade secret issues in a separate rule, published in final form on September 30, 1986 (51 FR 34590).

The third issue remanded to OSHA involved the scope of the standard's coverage. As noted, the HCS currently applies to employers and employees in the manufacturing sector. The Court rejected the Secretary's contention that section 6(g) gave him the flexibility to regulate the most hazardous sector first before commencing rulemaking for other sectors in which workers are exposed, to a lesser extent, to the same hazards. The Court agreed that section 6(g) "clearly permits the Secretary to set priorities for the use of the Agency's resources, and to promulgate standards sequentially." 763 F.2d at 738. The Court also acknowledged that "there is substantial evidence in the record that the manufacturing sector has the highest incidence rate of chemical exposures which the Agency has authority to regulate." *Id.* at 737. However, the Court held that it is not enough merely to establish that the sector selected for coverage presents greater hazards than those that have been left for later rulemaking. Given the record evidence of high levels of exposure to hazardous chemicals in several job settings outside the manufacturing sector, the Secretary was required to explain "why coverage of workers outside the manufacturing sector would have seriously impeded the rulemaking process" or

"why it is not feasible for the same standard to be applied in other sectors where workers are exposed to similar hazards." *Id.* at 738.

The Court was not persuaded that the HCS would provide protection to uncovered workers because chemical hazard warnings would be found on container labels and detailed information on material safety data sheets would become increasingly available in the unregulated sectors as a result of being required in manufacturing. *Id.* There was considerable record evidence that indicated that workers in the non-manufacturing industries are exposed to chemical hazards. The Court concluded that the Secretary had not stated why it would not be feasible to require employers in non-manufacturing industries to give workers material safety data sheets and training as required in the manufacturing sector. *Id.* The Court maintained that the Act required an explanation why the same information, that is, labels, material 31854 safety data sheets, and training, is not needed for workers in other sectors similarly exposed to hazardous chemicals. *Id.* at 733-39. Therefore, as previously indicated, OSHA was directed by the Court to reconsider the application of the standard to employees in the non-manufacturing industries and to order its application to these other sectors unless the Secretary can state reasons why this application would not be feasible. It should be noted that in previous OSHA litigation, the Courts have defined "feasibility" in terms of OSHA rules as meaning "capable of being done." *American Textile Manufacturers Institute v. Donovan*, 452 U.S. 490, 508-509 (1930) (ATMI).

OSHA decided not to appeal this decision. As stated in the preamble to the final rule (48 FR 53236):

> It should be emphasized that the Agency does not believe that employees in other industries are not exposed to hazardous chemicals, or that they should not be informed of those hazards. OSHA has merely

exercised its discretion to establish rulemaking priorities, and chosen to first regulate those industries with the greatest demonstrated need.

OSHA was prepared to evaluate the HCS' effectiveness in getting information to downstream employers, and to extend the standard if necessary. In fact, the Agency initiated the process on March 4, 1985, prior to the Court decision, when the Assistant Secretary asked the National Advisory Committee on Occupational Safety and Health (NACOSH) to give OSHA its recommedation on the need and feasibility of expanding the scope of the HCS to other industries. On June 21, 1985, NACOSH adopted the following recommendation:

> [NACOSH] strongly endorses the OSHA effort to promulgate a Hazard Communication Standard and selection of the manufacturing sector for its initial scope of coverage. It is the consensus recommendation of the Committee that the scope of the current Hazard Communication Standard should be expanded to cover all employees in all industries at as early a time as possible. Complete implementation may require phasing in gradually. The BLS [Bureau of Labor Statistics] incidence rates of occupational illnesses, and other appropriate factors, should be primary considerations in expanding the coverage. The Committee further recommends that OSHA establish a task force to address these issues.

Meanwhile, OSHA's review of the rulemaking record showed that while there was considerable evidence concerning the need for hazard communication in other industries, and general support for a finding that the HCS would be feasible for non-manufacturing, there was a need for more direct evidence of the feasibility of expanded coverage, particularly in the area of economic feasibility. Accordingly, OSHA believed it was necessary and appropriate to initiate further rulemaking. OSHA

commissioned a study of the economic impact of extending the HCS to the fifty major non-manufacturing industry groups within its jurisdiction, and issued an Advance Notice of Proposed Rulemaking (ANPR) seeking public comment on present hazard communication practices outside manufacturing, and the likely impact of extending the HCS to industries significantly different from the prototypical manufacturing worksites on which the original standard was based. 50 FR 48794 (Nov. 27, 1985). Over two hundred responses were received. Based on this newly acquired evidence and on the previous rulemaking record, OSHA was in the process of drafting a proposed rule which it expected to publish for notice and comment, followed by promulgation of a final rule in early 1988.

On January 27, 1987, however, the United Steelworkers of America, AFL-CIO-CLC and Public Citizen, Inc., petitioners in the 1985 challenge, filed a Motion For An Order Enforcing The Court's Judgment and Holding Respondent in Civil Contempt. Petitioners claimed that the Court's 1985 order had not authorized OSHA to embark on further fact gathering; that OSHA should have made a feasibility determination on the 1985 rulemaking record. Petitioners also argued that even if further fact gathering had been allowed by the Court's order, OSHA's pace was unduly slow.

In response, OSHA noted that the Court's 1985 order did not specify that OSHA should act on the then-existing record. OSHA believed that seeking further evidence on feasibility in non-manufacturing was appropriate in light of its statutory obligation to issue rules that are well grounded in a factual record. OSHA also asserted that, consistent with Supreme Court precedent, the Agency should be permitted to exercise it discretion in determining the appropriate rulemaking procedures for complying with the Court's remand order. Lastly, the Agency argued that its schedule to complete the rulemaking was reasonable and did not constitute undue delay.

On May 29, 1987, the Court issued a decision holding that the Court's 1985 remand order required consideration of the feasibility of an expanded standard without further rulemaking. *United Steelworkers of America, AFL-CIO-CLC v. Pendergrass*, No. 83-3554 (3d Cir.) (*United Steelworkers II*). The Court declared that adequate notice had been provided to non-manufacturers during the original rulemaking that they might be covered by the HCS, *id.* slip op. at 7-10, 16-17, that the answers to the remaining questions OSHA may have had regarding feasibility were "self-evident" or "readily ascertainable" from the original record, *id.* at 15, 17, and that further fact finding was "unecessary", *id.* at 15. The Court ordered the Agency to issue, within 60 days of its order, "a hazard communication standard applicable to all workers covered by the OSHA Act, including those which have not been covered in the hazard communication standard as presently written, or a statment of reasons why, on the basis of the present administrative record, a hazard communication standard is not feasible." *Id.* at 19. OSHA is responding to the Court order by issuing this final rule expanding the scope of the HCS' coverage to all workers within OSHA's jurisdiction.

OSHA continues to believe that it should have been permitted to follow the rulemaking procedures in the Act by issuing a notice of proposed rulemaking and developing a public record prior to promulgating a final rule. However, as discussed in the following section regarding feasibility, the Agency does not have sufficient evidence in the current record to indicate that the rule would be infeasible for any part of the non-manufacturing sector. OSHA recognizes that information submitted during a normal rulemaking process might have resulted in further changes to the provisions to better address feasibility or practicality concerns.

In light of the fact that there may be additional information regarding the feasibility or practicality of the

rule as it applies to some non-manufacturing sectors, the Agency invites persons to provide such information and any recommendations for further rulemaking within sixty days of the date of publication of this final rule. OSHA will then evaluate these submissions and determine whether any additional rulemaking is required. Data or evidence related to feasibility should be addressed to: Directorate of Health Standards Programs, Occupational Safety and Health Administration, Attention: Hazard Communication, 200 Constitution Avenue, N.W., Room N3718, Washington, D.C. 20210.

31855 *C. Feasibility of the Standard*

In the context of OSHA standard setting, feasibility constraints limit the extent to which standards can address health and safety concerns within the workplace. Section 6(b)(5) of the Act, 29 U.S.C. 655(b)(5). Feasibility analysis involves an inquiry to determine whether a standard is both technologically and economically capable of being done. *ATMI*, 452 U.S. at 512-13 and 513 n.31 (1980). As the Third Circuit has indicated, "the Secretary was able to determine that the hazard communication standard could feasibly be applied in the manufacturing sector." *United Steelworkers II*, slip op. at 16. The Court further noted that OSHA had concluded in the final rule that importers and distributors could feasibly comply with the HCS based on the evidence in the record and that "this is equally true of all non-manufacturer user employers. Plainly, the ease with which the same information can be utilized by those employers can be easily determined from the information already in the record." *Id.* at 18. The Third Circuit has ordered expansion of the HCS to all workers *unless* OSHA can give reasons why the HCS is infeasible for particular industries, and has forbidden OSHA from gathering further evidence.

OSHA concludes that the original HCS rulemaking record (Docket H-022), does not contain credible evidence

indicating the standard would be infeasible for any industrial sector. In fact, OSHA believes that the original record on the whole supports a finding that the performance-oriented HCS is feasible for all industries. In addition, the Agency's experience under the present HCS and other pertinent OSHA standards, the promulgation and implementation of State and local right-to-know laws, and evidence and data gathered by the Agency since the 1985 Court order (Docket H-022D), further supports OSHA's conclusion that non-manufacturing employers are "capable" of implementing the HCS for their employees potentially exposed to hazardous chemicals.

OSHA found that the HCS is technologically feasible for manufacturers, and believes it is clearly technologically feasible for non-manufacturers as well. Twelve of the OSHA-approved State plan States have already extended the rule to cover the non-manufacturing sector, and the requirements are being enforced in those States as workplace standards. This experience provides practical evidence of the technological feasibility of the requirements of the rule. The more technical aspects of the standard—scientific evaluation of chemicals to determine their hazards and creation of material safety data sheets and warning labels—remain a burden on those producing or importing hazardous chemicals. The technical expertise needed to develop the chemical hazard information, and its associated costs, is subsumed within the current rule covering manufacturers, and it has been found feasible. All other requirements in the HCS, such as maintaining material safety data sheets, developing a written hazard communication program, and designing and implementing chemical hazard training, are conventional and common business practices that are administrative in nature, and no technological barriers prevent their development and implementation. OSHA has mandated such practices for some non-manufacturing workplaces since the early 1970's. *See, e.g.*, 29 CFR 1915.97 (requiring material safety data sheets and chemical hazard training for shipyard work-

ers); 1917.22 (requiring marine terminal workers be instructed as to the chemical hazards presented by cargo); 1918.86 (requiring chemical hazard instruction for longshore workeres); 1926.21 (requiring chemical hazard training for construction workers). *See, also*, H-022, Ex. 99 (journal article regarding usefulness of material safety data sheets, written by Dow Chemical Company representatives and published in December 1957).

OSHA also believes that the economic feasibility of extending the current HCS to the non-manufacturing sector is supported by the record. Simply put, economic feasibility is established by evidence that the standard will not threaten the regulated industry's "long-term profitability." *ATMI*, 452 U.S. at 531 n.55. Costs associated with expanding the standard to cover non-manufacturing workplaces will stem from the initial start-up costs and the less substantial recurring program implementation and upkeep costs for: maintaining material safety data sheets received from manufacturers, importers, distributors, and other employers; creating labels for in-house containers of hazardous chemicals; developing a written hazard communication program, including a list of hazardous chemicals present in the workplace; and developing and implementing chemical hazard training.

After careful analysis of the original HCS rulemaking record, OSHA concludes that, as a whole, it supports a finding that non-manufacturers are economically capable of providing employees chemical hazard information in the manner prescribed by the HCS. As noted previously, development of the evidentiary record for the HCS began as early as 1974. In that year, NIOSH recommended that OSHA adopt a standard requiring *all* employers to implement a system of labels, placards and material safety data sheets in their workplaces to inform employees about the chemical hazards to which they may be exposed. (H-022, Ex. 4). The NIOSH recommended standard, like the HCS, included requirements that employers ensure

that chemicals in the workplace are marked with hazard warnings and that material safety data sheets are "filed in the establishment" where they are "readily available for examination by workers." *Id.* at 3. This hazard identification and warning system was designed to additionally "help in the education of employees and provide the data necessary for employers to take proper action to safeguard their employees." *Id.* at 1. NIOSH concluded that such a chemical hazard communication program was appropriate for all employers. *See, also* comments of the Air Transport Association, H-022, Ex. 5-3 ("[T]he airlines have no general objection to the [NIOSH] Criteria . . . [except that it] should clearly delineate the responsibility of the manufacturer supplying the necessary data on the Material Safety Data Sheets.").

The 1975 report of the Standards Advisory Committee on Hazardous Materials Labeling (H-022, Ex. 3), recommended a "total system" approach to chemical hazard communication not unlike the comprehensive approach of the current HCS. The Advisory Committee, which included representatives of non-manufacturers, recommended labeling and placarding systems, the creation and availability of material safety data sheets, and employee education and training programs for all workers potentially exposed to hazardous chemicals. The Committee recognized that these practices "are not new and novel concepts" but "well established in many industries and professional associations as well as regulated by various governmental agencies and international agreements." *Id.* at 3. The Advisory Committee made "no distinction among employees in different sectors of the economy." *United Steelworkers II*, at 7.

As the Court has stated, *id.* at 8, the 1977 ANPR requested public comment from all interested persons on whether a hazard communication standard should be promulgated by 31856 OSHA. Comments on the Standards Advisory Committee's recommended standard were specifi-

cally requested. Although OSHA did not receive comment from employers in every industrial sector, those non-manufacturers that did respond supported a comprehensive hazard communication system for their workplaces. For example, Sea-Land Service, Inc (H-022, Ex. 2A-6), supported requirements for container labels (consistent with transportation labels already in place), the availability of material safety data sheets to persons in the workplace, and individual training programs. Panhandle Eastern Pipe Line Company (H-022, Ex. 2A-7) and Truckline Gas Company (H-022, Ex. 2A-9) both "agree[d] that employees need information about the product with which they work" and that this could be accomplished by requiring suppliers of hazardous chemicals to label containers with the "degree and nature of the hazard" and by requiring user employers to "inform employees of the hazard." Those companies had already developed "a special manual of data for all chemicals, solvents and cleaners used in [their] operations and maintenance."

Wisconsin Electric Power Company (H-022, Ex. 2A-30), stated that given adequate labels and material safety data sheets from chemical manufacturers and suppliers, chemical users such as they "would be in a position to prepare their own Material Safety Data Sheets, hazard placard systems, proper labeling of auxiliary and secondary containers and training of personnel who may use or otherwise contact this material." Recognizing the need for "proper labeling, storage, handling and instructions in the use of hazardous materials," Wisconsin Electric Power Company had already "developed and put into effect a Hazardous Materials Control Program." Southern Gas Association (SGA) (H-022, Ex. 2A-75) also believed that suppliers and manufacturers of hazardous materials should be required to provide proper labeling, warnings and other hazard information to all employers using these materials. SGA further suggested that OSHA promulgate a standard directing all employers "to establish required training for

employees that may handle or otherwise be exposed to any hazardous materials." These comments and others filed in response to OSHA's 1977 ANPR indicate that many non-manufacturers consider maintaining labels received on chemical containers, making material safety data sheets received from suppliers available to employees, and providing information and training to employees regarding the chemical hazards present in the workplace to be economically feasible. *See, also* H-022, Exs. 2A-2 (Schirmer Engineering Corporation); 2A-31 (Union Electric Company); 2A-32 (Texaco); 2A-36 (American Trucking Association, Inc.).

Moreover, comments received from non-manufacturers at later stages of the original rulemaking also indicate they are capable of implementing the performance-oriented HCS. In fact, there are comments which indicate that many of these requirements were already being implemented in the non-manufacturing sector.

For example, the Western Agricultural Chemicals Association indicated that its members provide material safety data sheets to anyone who requests them, including customers in the non-manufacturing sector (Tr. 2873). Their representative further stated that "[i]n the agricultural field, I would say most technical products have material safety data sheets. I would say maybe 75% to 80% of the inerts have them . . ." (Tr. 2881).

There was also testimony from employee representatives, including those in the non-manufacturing sector such as airline mechanics, that they requested and were able to obtain material safety data sheets from manufacturers for products in use in their facilities. Tr. 2819-21, 3131, 3828. One union testified that a joint employee-employer safety committee received every material safety data sheet it requested, and that the union then trained workers to be able to use the information. Tr. 2824-A.

Another non-manufacturing union representative, the International Brotherhood of Painters and Allied Trades,

indicated that it shared collected material safety data sheets with employers who needed such information. "[T]o contractors who make requests of use for information, we do provide them material safety data sheets, write-ups on the chemicals and the products . . . We do everything—our union does everything they can as a service to our contractor members to provide them with the information they need to operate safely. . . ." Tr. 2101-2.

Other large companies with manufacturing as well as non-manufacturing establishments testified that information was made available throughout their corporations, and they provide information to all customers regardless of industry. For example, Atlantic Richfield Company testified that they have a company-wide material safety data sheet policy and program. "[U]nder this program, a material safety data sheet is recognized as a basic source of information for practical health, safety and environmental information. The MSDS whether generated internally or obtained from a supplier is used to communicate relevant data within the company and to outside customers. It is the responsibility of our various operating companies to distribute copies of each MSDS to customers and company facilities for employee instruction and/or information." Tr. 2439. Their company facilities include such non-manufacturing operations as petroleum production.

Similarly, Exxon, Inc. testified that it too provides material safety data sheets to all customers: "[W]e consider a material safety data sheet a matter of public information that's part of our literature, regularly available to anyone who requests it." Tr. 1708-09. *See, also,* Shell testimony at Tr. 1712 and 2500, and Uniroyal Chemicals at Tr. 1464.

Therefore, based on the recommendations of NIOSH, the Standards Advisory Committee and the comments re-

ceived from non-manufacturers and their representatives participating in the lengthy rulemaking. OSHA concludes that the original record as a whole indicates that non-manufacturers are capable of complying with the HCS. As long as chemical suppliers provide adequate chemical hazard information in the form of labels and material safety data sheets to non-manufacturers using the chemicals, those user employers, like the manufacturers who use hazardous chemicals which they themselves did not manufacture or import, can develop hazard communication programs and provide employees information and training on the chemical hazards in the workplace.

In light of the evidence in the original rulemaking record, OSHA concludes that non-manufacturers can incorporate the HCS' administrative practices and provide chemical hazard information to their employees. OSHA believes all employers can ensure that containers of chemicals are maintained with proper hazard warnings just as an employer would maintain labels or marks on containers to ensure that employees comprehend their contents and intended uses. Likewise, all employers are able to acquire and maintain up-to-date material safety data sheets for hazardous chemicals just as they are able to acquire and maintain up-to-date cost information and performance specifications on those very same 31857 chemicals. OSHA also concludes that it is feasible for employers to inform and train their workers regarding the chemical hazards present in the workplace just as employers are capable of training their workers to perform their jobs in an efficient and speedy manner. These conclusions are further supported by the experience and evidence gathered by the Agency since promulgation of the HCS for manufacturers in 1983.

At this time, OSHA has no evidence indicating that the profitability of manufacturers generally, or even chemical manufacturers in SIC 28 (by far the most economically burdened by the HCS, *see* 48 FR 53333), has been threatened by complying with the HCS. Manu-

facturers have had the considerable costs of evaluating, collectively, hundreds of thousands of chemicals for their hazards and creating corresponding labels and material safety data sheets since November 1985, as well as the costs of implementing an in-plant program by May 1986. After thorough analysis, OSHA determined that the current HCS would not impose a substantial burden on manufacturers and that the HCS was economically feasible for them. *See* 48 FR 53333. Experience to date in implementation of the rule supports that finding. For example, if manufacturers were experiencing significant feasibility problems in complying with the rule, OSHA would have expected to receive numerous substantive comments regarding those problems in response to the 1985 ANPR questions addressing feasibility concerns. However, although some manufacturing employers objected to some requirements, substantive comments demonstrating infeasibility were not received, which appears to support OSHA's conclusion that compliance with the HCS was, and continues to be, economically feasible for manufacturers and indicates the standard is also feasible for non-manufacturers. In fact, some manufacturers took the opportunity to state their continuing support for the rule and its requirements. *See, e.g.*, H-022D, Ex. 2-14, (The Chemical Manufacturers Association "strongly believes that the substantive provisions of the Hazard Communication Standard are sound as a matter of science and policy."); Ex. 2-67 (Economics Laboratory, Inc. "considers hazard communication worth the effort.")

Generally, the HCS costs to non-manufacturers would be a function of the number of hazardous chemicals in the workplace, and the number of employees exposed to hazardous chemicals. If employees are not potentially exposed to hazardous chemicals in a particular work operation, the proposed standard does not apply. Also, to the extent that employers are voluntarily providing information, or providing information in order to com-

ply with other regulations or laws, this should significantly reduce the burden of compliance with this rule. Approximately 32 States and several localities already have hazard communication/right-to-know laws covering non-manufacturing industries indicating that many others seeking to protect the safety and health of workers have concluded that industry can comply with these types of requirements. In fact, as evidenced in the original rulemaking record, many companies involved in interstate commerce would benefit from promulgation of a uniform Federal standard as it would preempt different and potentially conflicting State and local laws and lessen overall compliance burdens. 48 FR 53283. *See also, e.g.*, H-022D, Ex. 2-83 (The American Gas Association "believes that a Federal Standard, rather than a variety of differing state regulations, would best serve the needs of the natural gas industry, the employees in our industry, and the general public as well."); Ex. 2-108 (The National Constructors Association has found that "[i]t has been nearly impossible to establish uniform interstate policy" and "can clearly see the wisdom of having one workable/cost-effective government regulation that addresses hazard communication.")

Although the original HCS record contained no evidence to indicate the HCS would be economically infeasible for non-manufacturing, OSHA recognized that potential feasibility concerns could arise, for example, with small businesses, businesses with large employee turnover (such as retail stores and construction companies), and businesses with rapid turnover of hazardous chemicals in the workplace (such as warehouses and marine cargo operations). However, based on the original HCS rulemaking record, and additionally based on: (1) The apparent successful implementation of the present HCS by manufacturers; (2) the implementation of other Federal communications standards and of State plan States' laws by non-manufacturers; and, (3) on regulatory im-

pact and regulatory flexibility analyses prepared by the Agency since the 1985 Court order and summarized in Section III of this document, OSHA concludes that the provisions in the current Hazard Communication Standard are economically feasible for all of the non-manufacturing industries.

OSHA is also aware that many employers in the manufacturing sector have been able to satisfy some of their responsibilities under the HCS by using compliance materials obtained from various sources. Trade associations, for example, have frequently been instrumental in assisting their members in developing programs suitable for their type of industrial facility. This is particularly appropriate given the performance orientation of the HCS, and the flexibility employers are permitted to design appropriate compliance programs. Sample written programs and other written materials, as well as training programs regarding the requirements of the rule, have been developed and provided to association members and have facilitated compliance efforts. The ability of associations to accomplish this successfully demonstrates technical feasibility and enhances economic feasibility. Trade associations in states covering non-manufacturing workplaces under their right-to-know rules have also been able to develop materials to assist their members to comply. Materials developed for these State laws or for the manufacturing sector under the current HCS could be adapted for the non-manufacturing workplaces newly covered by the HCS.

There have also been a number of services provided by consultants in the private sector. These range from very specific items, such as computer programs to manage information, to a comprehensive compliance stategy, where a consultant will devise an entire program to enable a facility to comply. Such services will often minimize the burden of compliance by minimizing the time the facility staff must spend to develop and implement a program.

The availability of such programs also provides support for the conclusion that the rule is feasible.

For large companies, the burden per facility will often be minimized by corporate development of a standardized program. It can be expected that most corporations with multiple facilities will use this approach (this has occurred in the manufacturing sector as well).

Therefore, OSHA concludes that similar resources will be available to employers in the non-manufacturing sectors, which further demonstrates that the rule is feasible for implementation in all sectors. In fact, given the preexisting coverage of non-manufacturing under various state rules, and the extent of the 31858 materials developed in response to the current HCS which would also be applicable in non-manufacturing, additional development of such materials should require considerably less effort and be easier for non-manufacturers to obtain.

Nevertheless, OSHA recognizes that the unique characteristics of some businesses render certain provisions of the current standard unnecessary or ineffective in communicating the hazards of chemicals to workers. The Agency has thus made some modifications to the standard to ensure that its provisions are practical and effective in communicating hazards to all workers. *Cf. ATMI*, 452 U.S. at 531 n.32 (OSHA may use cost-effectiveness analyses and choose the less costly of two equally effective standards). The inclusion of these "tailoring" provisions is consistent with the Agency's action in tailoring the original HCS to make it practical and cost-effective for all manufacturers. *See* 29 CFR 1910.1200(b)(3)-(5). Now that the coverage of the standard is being expanded to non-manufacturing employers as well, it is necessary to tailor the standard to the unique characteristics of these non-manufacturing employers. The tailoring provisions explained in Section II of this preamble, are based on the original record in the HCS rulemaking.

and also on Agency experience in implementing the current rule; State plan State experience in implementing expanded versions of the current rule; and comments submitted to the Agency in response to the ANPR published in November 1985. OSHA believes that the knowledge and experience gained during the past few years of implementation and enforcement of the current rule must be taken into consideration when crafting a rule to appropriately apply to the non-manufacturing sector.

The Agency's position is that all employees are entitled to information regarding the chemical hazards they are exposed to in the workplace, and that a uniform Federal hazard communication standard is the best method to ensure that information is provided. This position is consistent with the Act (protecting all employees to the extent feasible), as well as with the Court's decision upon review of the rule. Therefore, this final rule addresses communicating chemical hazards to all exposed employees.

It should be emphasized that in preparing a detailed regulatory impact analysis for the expansion of the scope of the HCS, OSHA has accumulated evidence to indicate that some employees in every SIC code designation are exposed to hazardous chemicals, and that it is therefore not appropriate to exempt any particular industry sector. For example, OSHA has received suggestions that retail establishments be exempted since employee exposure to chemicals is believed to be unlikely in these types of facilities. However, there is testimony in the original rulemaking record from the United Food and Commercial Workers International Union (Tr. 3088-97) that demonstrates that workers in such facilities are exposed to hazardous chemicals, and therefore do need the protections afforded by coverage under the HCS:

> While supermarkets don't use hundreds of hazardous chemicals like some manufacturing industries, a large number of workers are exposed to the

> dozen or so they do use. Chemicals used include caustic and acid cleaning compounds, solvents, waxes, paints and disinfectants . . . Let me relate to you one case within our union where workers were over-exposed to an unidentified substance. A group of supermarket workers began experiencing dizziness, upper respiratory tract irritation and headaches . . . Not until workers started to talk with one another did they start to suspect a possible link between their illness and a certain solvent that was used to remove old price labels from merchandise called Garvey XC-36.

See Tr. 3088-89. *See also* Tr. 414 and Tr. 1840-43. The testimony further relates other incidents, as well as the various activities the union had to pursue to obtain information for exposed workers—including chemical analysis of products to determine their contents. This illustrates the need for application of the standard in industries such as retail stores, as well as those industries where chemical exposures are more obvious. For additional testimony regarding the extent of chemical exposures in the non-manufacturing sector, *see, e.g.*, hospital workers: Tr. 411-14, 2738-41, and 3036 (". . . hospital workers are exposed to formaldehyde, ethylene oxide, cleaning agents which are often very caustic . . .") (Tr. 411); barbers and beauticians: Tr. 415-16 (". . . work around hair dyes . . . known to cause cancer . . ."); longshore workers: Tr. 3143; utility workers: Tr. 417, 3078, 3130; workers in dry cleaners and laundries: Tr. 416, 4084-90 (". . . [B]eyond the chlorinated solvents that your dry cleaners use, some cleaners and laundries also use dyes . . ."); farmworkers: Tr. 2260.

D. Construction Advisory Committee Recommendations

On June 23, 1987, the Construction Advisory Committee on Occupational Safety and Health met to discuss a draft proposed standard prepared by OSHA to expand

the scope of the HCS to the non-manufacturing industries. The draft proposed rule was very similar to the final standard being promulgated herein. OSHA has reviewed the recommendations of the Construction Advisory Committee, and incorporated a number of the suggested revisions into this document to tailor the rule for the construction industry, and for other industries which have similar concerns due to similar differences in work operations from the typical manufacturing establishment. Other recommendations called for more substantive changes to the HCS, affecting the obligations of chemical manufacturers and others, and OSHA does not believe they are supported by the record or appropriate to incorporate into this final rule without further opportunity for notice and comment from those affected. It is important to note, however, that despite the recommended changes there were no indications that members of the Construction Advisory Committee believe that it is infeasible to implement hazard communication programs in the construction industry. In fact, as OSHA has noted previously, the construction industry has been subject to training requirements concerning chemical hazards for many years (*see* 29 CFR 1926.21).

In preparing the draft proposed rule, and subsequently this final rule, OSHA did review the *Report on Occupational Health Standards for the Construction Industry* which was submitted by the Construction Advisory Committee to the Assistant Secretary on May 16, 1980. In that report, the Committee addressed recommendations for labels, material safety data sheets, and training—all of the major components of the HCS.

Of particular concern to the Committee at that time was that construction employers do not have access to the necessary information upon which to develop appropriate signs and labels or material safety data sheets, and therefore must depend upon suppliers for such information. "[C]onstruction employers may not always be aware

of the hazard associated with a particular product or device if the items are not accompanied upon purchase by appropriate labels and data sheets. . . ." OSHA agrees that this lack of information has been a problem for all downstream users of chemicals, and thus developed the approach incorporated into the HCS—producers or importers of chemicals are responsible for evaluating the hazards 31859 and transmitting that information to downstream employers or users of the materials. Under the expanded rule, construction employers would be the recipients in this downstream flow of information.

The HCS did not exist at the time of the report, and the Committee thus recommended that a solution to the problem of lack of information "would be to modify and extend the existing OSHA standard for material safety data sheets which now applies only to ship repairing, shipbuilding, and ship breaking (29 CFR 1915, 1916 and 1917). The modified standard would require manufacturers or formulators of harmful materials or agents to supply material safety data sheets along with their products in such a fashion that they reach construction employers." Shipbuilding and ship repairing are in the manufacturing sector, and covered by the requirements of the 1983 final rule—ship breaking will be covered by these expanded provisions. Therefore, OSHA is doing what was recommended in 1980, *i.e.*, extending the existing OSHA standard for material safety data sheets to construction. The Advisory Committee concluded that although the hazard information may have been difficult for construction employers to acquire in the past, "such information was fundamental to the preparation of warning signs, labels, training programs, and other important job safety and health activities."

The Construction Advisory Committee is now recommending that the construction industry be regulated under a separate standard for Hazard Communication.

rather than being treated as any other downstream employer who uses chemicals. The rationale is that construction sites are unique among industrial workplaces and would be addressed in a vertical standard specific to the industry. Although OSHA has found this argument persuasive for a few health standards, where there are fundamental differences in control strategies to achieve permissible exposures for a chemical in a fixed site facility versus the construction site, it does not appear to be appropriate in this situation which simply involves transmittal of information, that can be accomplished on any type of site. Arguments regarding transient workers, mobile work sites, etc. can appropriately be made for other non-manufacturing users of chemicals as well. The problems raised can be dealt with more effectively by modifying the provisions of the current rule to address them, rather than preparing completely separate standards for each industry.

It was interesting to note that although the Construction Advisory Committee was essentially maintaining that hazard communication in construction could be treated as a separate issue, many of the changes the members were recommending would often have required substantive changes in the requirements for the manufacturing sector. As noted above, the Committee expects to receive labels on containers and material safety data sheets from its suppliers. This is certainly consistent with OSHA's approach in the rule. But the Committee is also recommending that the labels on containers being shipped to construction contain additional information, and that the requirements for material safety data sheets be slightly different as well. They also recommended changes in the hazard determination provisions, while maintaining that hazard determinations must be accomplished in the manufacturing sector. These recommendations serve to support OSHA's view that in an approach which requires a downstream flow of information, the relationship between the

requirements for producers and downstream users are so interdependent that separation of them into two separate standards would be logically inconsistent. And furthermore, since the requirements for hazard determinations, labels, and material safety data sheets were based on an extensive rulemaking record, and are not industry-specific, it would not be appropriate to modify those requirements at this point.

Two separate standards would also require cross-referencing provisions from one rule to another to ensure proper information transmittal, a regulatory format which would be unnecessarily confusing to the regulated community. OSHA believes it is more effective to list, in one standard, the obligations of chemical producers, importers, and suppliers with those of the users so that employers using hazardous chemicals will be aware of the content and quality of the hazard information they are entitled to receive from their suppliers. Furthermore, it would not be appropriate to indicate requirements for chemical manufacturers and importers in a standard which purports to cover solely the construction industry, as would have to be done to accommodate all of the recommendations of the Committee. Therefore, construction employers are included with all other employers in this standard. However, OSHA will print the rule in full in 29 CFR Part 1926 (in § 1926.59) for ease of reference for construction employers and employees. In addition, it will also be printed in 29 CFR Parts 1915, 1917, and 1918, for the use of maritime employers and employees (at new § 1915.99, 1917.28, and 1918.90, respectively), and will be referenced in Part 1928 covering agricultural employments.

E. Federal Community Right-to-Know Law

Expansion of OSHA's HCS will also have an impact on employers' obligations under another Federal law to inform State and local communities of the hazardous chem-

icals present in the workplace. On October 17, 1986, the President signed into law the Supefund Amendments and Reauthorization Act of 1986 ("SARA"). Part of the new law, Title III, the Emergency Planning and Community Right-to-Know Act of 1986, encourages and supports emergency planning efforts at the State and local level and provides citizens and local governments with information concerning potential chemical hazards present in their communities.

Two provisions in the new law, sections 311 and 312, mandate that employers required under the Occupational Safety and Health Act of 1970 and regulations under that Act to prepare or have available material safety data sheets for hazardous chemicals in their workplaces, must also submit chemical hazard information to State and local governments. Specifically, employers required by the OSHA HCS to create or maintain material safety data sheets for employees must also submit to the State emergency response commissions, the local emergency planning committee and the local fire department: (1) A material safety data sheet for each hazardous chemical for which a data sheet is available (section 311); and (2) an emergency and hazardous chemical inventory form (section 312). The public may request material safety data sheets and inventory information from the local planning committee.

Because all manufacturing employers are currently subject to the OSHA HCS and required to create or maintain data sheets for the hazardous chemicals present in their workplaces, they must also comply with the community reporting requirements of the Emergency Planning and Community Right-to-Know Act. An expanded HCS covering non-manufacturers will require non-manufacturers to provide chemical hazard information not only to their employees but also to the surrounding communities.

31860 On January 27, 1987, EPA proposed regulations to implement the community data sheet and inventory reporting requirements. A detailed explanation of the EPA proposal can be found at 52 FR 2836 (January 27, 1987). A final rule is expected to be published in the near future. OSHA has prepared a preliminary estimate of the costs of expansion of the EPA requirements into the non-manufacturing sector. This estimate is addressed further in the section of this preamble dealing with the regulatory impact analysis for the final rule.

EPA has established a toll-free hotline to answer questions concerning the requirements: Chemical Emergency Preparedness Program Hotline, 1-800/535-0202; in Washington, DC at 1-202/479-2449.

II. Summary and Explanation of the Issues and the Provisions of the Final Standard

This final rule is both an expansion and revision of the current HCS. The regulatory text presented herein includes the unchanged provisions of the present rule, as well as those which OSHA is changing. This was done to ensure that readers can clearly follow where these changes would appear in the standard. As explained below, the substantive changes were found to be necessary and appropriate for a hazard communication standard covering all workers exposed to hazardous chemicals. OSHA is also making several corrections and minor technical amendments to the standard. OSHA finds prior public notice and comment for these minor amendments to the unnecessary because of their non-substantive nature. 5 U.S.C. 553(b); 29 CFR 1911.5.

The discussion which follows will address the changed provisions of the rule, as well as the issues related to these changes. A detailed summary and explanation of the current rule's provisions is only provided when necessary for the discussion of the modification. For a complete explanation of the existing provisions, please see

the preamble to the current HCS (48 FR 53334-40). The current rule is codified at 29 CFR 1910.1200, and was published at 48 FR 53340-48. The modified trade secret provisions are discussed at 51 FR 34590.

This discussion is organized by paragraph of the standard, and is presented in the order these paragraphs appear in the HCS.

For ease of reference, OSHA will be printing the same rule in full in 29 CFR Part 1910 (in § 1910.1200) for general industry, 29 CFR Part 1926 (in § 1926.59) for construction, and in 29 CFR Parts 1915, 1917, and 1918, for the use of the maritime industry (at new §§ 1915.99, 1917.28, and 1918.90, respectively).

(a) Purpose

All references to the manufacturing sector, SIC Codes 20 to 39, have been deleted to reflect the expansion of the scope to all employers and employees. It should be noted that these changes have been made throughout the provisions of the rule, wherever the HCS currently addresses employers and employees in the manufacturing sector rather than empioyers and employees in general. Despite the expansion of covered employers from manufacturers to all employers, however, OSHA retains in this final rule the distinction between chemical manufacturers and importers who produce or import hazardous chemicals, and downstream employers who merely use the chemicals. Only the former are to prepare the technical hazard information for labels and materials safety data sheets accompanying hazardous chemicals, whereas all employers are to pass this information on to their workers potentially exposed to the chemicals through a comprehensive hazard communication program which includes individual training.

The original Hazard Communication Standard included, at 29 CFR 1910.1200(a)(2), a generally-worded state-

ment concerning the Agency's position regarding the preemptive effect of the standard. This paragraph has been revised to more explicitly state the Agency's position regarding preemption based on the provisions of the Act and related legal actions. This final rule significantly expands the number of industrial groups to which the Federal standard applies, and thus it significantly expands the area in which state and local laws will be preempted.

Section 18(a) of the Act, 29 U.S.C. 667(a), provides that a state may assert jurisdiction through any court or agency over "any occupational safety or health issue with respect to which no standard is in effect under section 6." Conversely, where OSHA has issued a standard, section 18 expressly preempts states from asserting jurisdiction through any court or agency over the issue addressed by that standard, unless a Federally-approved State plan is in effect. 29 U.S.C. 667(a) and (b); 29 CFR 1901.2.

The express preemption provisions of the Act apply to all state or local laws which relate to an issue covered by a Federal standard, without regard to whether the state law would conflict with, complement, or supplement the Federal standard, and without regard to whether the state law appears to be "at least as effective as" the Federal standard. The "at least as effective as" test applies only to state standards adopted under an approved State plan. 29 U.S.C. 667(c)(2). In enacting OSHA, Congress rejected provisions which would have permitted states to enforce laws which were "not in conflict with" or "at least as effective as" Federal OSHA standards. *See* Senate Comm. on Labor and Public Welfare, 92d Cong., 1st Sess., Legislative History of the Occupational Safety and Health Act of 1970, at 58, 706 (Comm. Print 1971). Instead, Congress enacted section 18 providing that Federally-approved State plans are the exclusive alternative to preemption.

Since the promulgation of OSHA's original Hazard Communication Standard, a number of court decisions

have dealt with the effect of express and implied Federal preemption upon state and local hazard communication or "right-to-know" laws. *United Steelworkers of America* v. *Auchter*, 763 F.2d 728, 733-36 (3d Cir. 1985) (Federal Hazard Communication Standard expressly preempts state hazard disclosure laws in manufacturing sector); *New Jersey State Chamber of Commerce* v. *Hughey*, 774 F.2d 587 (3d Cir. 1985) (provisions of New Jersey right-to know law which pertain primarily to community or environmental safety and health are not expressly preempted; right-to-know laws subject to implied preemption if they make it impossible to comply with Federal law or pose an obstacle to objectives of the Federal Act); *Manufacturers Association of Tri-County* v. *Knepper*, 801 F.2d 130 (3d Cir. 1986) (similar holding in connection with Pennsylvania right-to-know law).

The revised paragraph (a)(2) specifically provides that both state and local laws pertaining to occupational hazard communication are preempted by the Federal standard. In the one court decision which has addressed the question, the United States Court of Appeals for the Sixth Circuit ruled that the Federal Hazard Communication Standard preempts local as well as state laws. *Ohio Manufacturers Association* v. *City of Akron*, 801 F.2d 824 (1986). The court noted that the text of § 1910.1200 (a)(2) did not mention localities and referred only to preemption of "state" laws. *Id.* at 827, 831-832. Nevertheless, relying upon references to local as well as state laws in the preamble to the 1983 standard, the court correctly inferred that OSHA had intended to preempt all non-Federal occupational hazard communication 31861 laws. *Id.* at 832. Therefore, in accordance with the Court decision, OSHA is making a technical amendment to paragraph (a)(2) so that it explicitly states that the HCS preempts local worker right-to-know laws.

The revised § 1910.1200(a)(2) not only defines hazard communication as an "issue" under the terms of the Act,

but also enumerates the generic areas addressed by the standard for purposes of establishing the parameters of preemption. Thus any State or local government provision requiring the preparation of material safety data sheets, labeling of chemicals and identification of their hazards, development of written hazard communication programs including lists of hazardous chemicals present in the workplace, and development and implementation of worker chemical hazard training for the primary purpose of assuring worker safety and health, would be preempted by the HCS unless it was established under the authority of an OSHA-approved State plan.

(b) Scope and Application

Laboratories. With regard to the coverage of laboratories, specifically addressed in paragraph (b)(3), OSHA concludes that the current rule's provisions, requiring only that labels and material safety data sheets received with incoming chemicals be maintained and that the general training of paragraph (h) be provided, are feasible for non-manufacturing laboratories as well. *See, e.g.*, comments of the Massachusetts Institute of Technology, H-022D, Ex. 2-120 ("We agree that the Hazard Communication Standard's requirements for labs are adequate. . . . We expect our compliance costs to remain at the current level of spending because the majority of these are start-up costs and some activities have been absorbed and integrated within existing programs.") OSHA believes that these somewhat limited hazard communication requirements for manufacturing laboratories are also appropriate for non-manufacturing laboratories because both share the operating conditions that distinguish them from the typical industrial workplace; they commonly use small quantities of many different hazardous chemicals for short periods of time; the conditions and purposes of the use of the chemicals frequently change, often unpredictably; many substances are of unknown toxicity; and

many workers are highly trained. *Compare* 48 FR 53287-89, *with* 51 FR 26663-64. OSHA concludes that the same HCS provisions tailored for manufacturing laboratories are appropriate for the protection of all laboratory workers within OSHA's jurisdiction.

It should also be noted that OSHA is currently proceeding with a specific rulemaking to directly address "Occupational Exposure to Toxic Substances in Laboratories" (51 FR 26660; July 24, 1986). When that rule becomes final, its provisions may supplement the information transmittal requirements of the HCS by directly reducing hazardous chemical exposures in laboratories by requiring, among other things, safe work practices. As noted in that proposal, the final rule might modify the general information and training requirements in the HCS to incorporate other aspects of that standard. Any changes in the application of the HCS provisions to laboratories will be addressed in detail in the final rule for laboratories and will be based on that rulemaking record (Docket H-150).

Coverage determined by "exposure." The HCS covers situations where employees "may be exposed" to hazardous chemicals (paragraph (b)(2)), and such exposure is defined to include potential exposure as well as actual exposure. This is to ensure that employees receive information about all chemical hazards in their work areas, and that they are prepared to deal with any unexpected releases or emergency situations, as well as exposures during the normal course of employment. OSHA concluded that employees are entitled to information regarding the chemicals to which they are exposed in their work areas. It should be noted, however, that individual facilities and workplaces may have some employees who are covered since their work involves exposure to hazardous chemicals, and others who are not covered because their work does not. For example, in a retail department store, maintenance workers or workers in a graphic arts department

may be covered since their jobs involve exposure to chemicals, but an accountant in the billing department would not be likely to experience exposure that would require coverage by the HCS.

There are a number of work situations where employees only handle sealed containers of chemicals, and under normal conditions of use would not open the containers and would not expect to experience any measurable exposure to the chemicals. Such work operations include, for example, warehousing, retail sales, marine cargo handling, and trucking terminals. It is reasonable to assume, however, that all such containers are subject to leakage and breakage, and these employees are in fact potentially exposed by virtue of the presence of these hazardous chemicals in their workplaces. Because of this potential exposure, they need information to protect themselves from the hazards of these chemicals in the event such an emergency situation occurs.

However, OSHA has considered the extent of information necessary or appropriate in this type of operation, and the practicality of requiring such work operations to be subject to all of the provisions of the rule. The primary need is to ensure that these employees know how to acquire and use the hazard information available to them, and to handle an emergency exposure situation. As in laboratory operations, maintaining lists of chemicals where the chemicals present may change on short notice, sometimes on a daily basis, is not a useful requirement. Similarly, obtaining material safety data sheets for every chemical in a sealed container that passes through a facility—even if it is there less than a day in some situations—would result in a considerable amount of paperwork, with little discernable benefit for the employees involved. Therefore, OSHA has added a provision, paragraph (b)(4), to limit the duties of employers for those work operations where employees only handle sealed containers that are not intended to be opened under nor-

mal conditions of use. (Some States which have adopted right-to-know laws have also recognized the practical problems of coverage in this area, and have included provisions limiting coverage of workplaces where chemicals are handled in sealed containers. *See, e.g.*, Tennessee Hazardous Chemical Right to Know Law, Tennessee Code Annotated, 50-3-2001 through 50-3-20019.) In these situations, employers must not remove labels affixed to incoming containers of hazardous chemicals; must maintain and provide access to material safety data sheets that are received for hazardous chemicals while the chemicals are in the workplace, and obtain material safety data sheets when they are not received but an employee requests one; and must train employees in accordance with the provisions of the rule to ensure they are protected in the event of a spill or leak.

The employees in these operations will always have access to the label information, which will provide appropriate hazard warnings and be a visual reminder of the potential hazards if exposure occurs. Employees will also be trained regarding the general classes of chemical hazards faced and the means by which they can protect 31862 themselves from these hazards when there is a spill or leak. The training must also address the availability and use of substance-specific information found on labels and material safety data sheets, where available. These requirements should provide employees handling only sealed containers of chemicals with the information they need.

This limited provision also addresses some of the concerns raised by representatives of industries with these types of workplaces. (*See, e.g.* Exs. 2-53, 2-75, 2-201, and 2-214). Although they generally were arguing that this type of operation warrants exclusion from the rule, OSHA does not agree that no protection under the HCS is required in these situations. As already described, a potential for exposure does exist, and therefore such employees must be appropriately covered. OSHA believes

the limited coverage described will effectively protect employees while recognizing the constraints of the particular work operations involved with regard to the applicability of the current rule to these types of work.

Labeling exemptions. The HCS includes a number of labeling exemptions to ensure that OSHA does not provide duplicative coverage for products which are already labeled under the rules of another Federal agency. It should be reemphasized that these exemptions (in paragraph (b)(4) of the original rule; paragraph (b)(5) in this final rule) are only from the container labeling requirements under paragraph (f)—all other provisions of the rule are still in effect. A minor correction is being made, however, to these exemptions to indicate that when medical or veterinary devices are labeled in accordance with the labeling requirements of the Food and Drug Administration (FDA) under authority of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 *et seq.*), those items are exempted from HCS labeling requirements. All other items regulated by FDA under that Act were listed in the HCS labeling exemption. Medical and veterinary devices were inadvertently omitted from the list of items that might be subject to FDA labeling requirements under the Federal Food, Drug, and Cosmetic Act, and they are exempted from HCS labels for the same reasons that the other items are exempt when subject to labeling under FDA. *See* 48 FR 53289. To ensure that all these FDA regulated items are treated in the same manner and that devices are exempted from HCS labeling if subject to FDA labeling, paragraph (b)(5)(ii) is amended by adding medical and veterinary devices.

Other exemptions. The HCS includes a number of specific, total exemptions from the requirements of the rule for certain types of chemicals. This rule adds three categories of exemptions: food, drugs, cosmetics, or alcoholic beverages in a retail establishment packaged for retail sale (paragraph (b)(6)(vi); consumer products

(paragraph (b)(6)(vii)); and certain pharmaceuticals (paragraph (b)(6)(viii)).

Food, drugs, cosmetics, alcoholic beverages. The current HCS includes an exemption for food, drugs, or cosmetics brought into the workplace for employee consumption. These types of exposures are not related to an employee's work, and therefore do not need to be covered under the HCS.

The expansion of the HCS into the non-manufacturing sector will result in many of these types of products being present in workplaces (e.g., liquor stores) where they are not intended for employee consumption, and where they normally would not result in employee exposure because they are packaged for sale to consumers. Although some of these products may meet the definition of a "hazardous chemical" (e.g., vinegar is acetic acid), when packed for retail sale they do not pose a hazard to workers that is any different than the hazards of such products in their homes. The label information required by other Federal agencies for foods, drugs, cosmetics, and alcoholic beverages should thus provide sufficient protection for workers, and OSHA has exempted these products from coverage under the rule. It should be noted that this is not an exemption for facilities of any particular industry, as all facilities may have other chemicals in use that would be covered by the HCS. In addition, since these products are exempted, employers which package them for retail sale would not have to furnish material safety data sheets to distributors receiving the products.

Consumer products. The current rule provides a labeling exemption for consumer products when they are labeled in accordance with the requirements of the Consumer Product Safety Commission (CPSC). CPSC requires consumer products which contain hazardous substances to be appropriately labeled. Examples of consumer products would include such items as oven cleaner,

paint stripper, and adhesive, which may be found in various types of workplaces. In addition to the specific labeling exemption, OSHA has been interpreting the rule as not being applicable to consumer products when used as a consumer would use them. OSHA is now adding this interpretation to the rule itself, paragraph (b)(6)(vi), stating that where such consumer products are used in the workplace in a a manner comparable to normal conditions of consumer use, resulting in a duration and frequency of exposure to employees which is no greater than exposures experienced by ordinary consumers, under such conditions the chemical would not have to be included in the employer's hazard communication program. This position is consistent with OSHA's reason for originally limiting the exemption for hazardous consumer products used in the course of employment to only an exemption from HCS labeling, and not material safety data sheet and training requirements. "OSHA recognizes . . . that there may be situations where worker exposure is significantly greater than that of consumers, and that under these circumstances, substances which are safe for contemplated consumer use may pose unique hazards in the workplace." 48 FR 53289. However, to the extent that workers are exposed to the substances in a manner similar to that of the general public, there is no need for any HCS requirements.

One example of such a differentiation in exposure situations involves the use of abrasive cleaners in the workplace. Where these are used intermittently to clean a sink, much as they would be used at home, the cleaners would not be covered under the standard. But if they are used to clean out reactor vessels, thus resulting in a much greater level of exposure, they would be covered. Or if an employee cleans sinks all day long, thus resulting in more frequent exposures, the abrasive would also be included in the hazard communication program. Thus workplaces which only have chemicals which are con-

sumer products used in the same way and as frequently as the general public would normally use them, would not have to have a hazard communication program.

It should be noted that OSHA intends to read this exemption narrowly. Where an employer is uncertain whether the duration and frequency of exposure to these products is comparable to consumer use, an employer should obtain or develop the material safety data sheet and make it available to employees.

In response to questions raised in the 1985 ANPR, OSHA received a few comments on the use of consumer products in the non-manufacturing sector. A number indicated that overexposure may occur from the use of such products, or that the frequency and duration of workplace exposure is typically greater than that experienced 31863 by consumers (Exs. 2-59, 2-83, 2-100, 2-120, and 2-164). Others stated that the exposure was comparable to consumer use (Exs. 2-46 and 2-63). There were several that felt the label provided enough information, and no additional requirements were needed to protect employees (Exs. 2-75, 2-79, 2-99, 2-107, and 2-116), while others felt the employer should be required to request material safety data sheets because employees are not getting enough information (Exs. 2-109, 2-128, and 2-169). One suggested that the label note that a material safety data sheet is available on request (Ex. 2-100), while another contended that when a product is used by a professional, it is no longer a consumer product (Ex. 2-199). OSHA believes that the consumer product exemption in this final rule takes all of these concerns into consideration, and strikes a balance between the practical considerations of acquiring and maintaining material safety data sheets on CPSC regulated products which employees are exposed to at home as well as at work, and the worker's need for more hazard information than a CPSC label when exposures are greater

or more frequent than typical public use of the chemical would generate.

A number of States adopting right-to-work laws have also developed consumer product exemptions. (*See, e.g.*, Wisconsin "Employees' Right to Know Law"; Illinois "Toxic Substances Disclosure to Employees Act.") However, most of these rules have taken a broader approach to the consumer product exemption, generally eliminating coverage of such products unless exposure is "significantly greater" than consumer exposure during the "principal consumer use." OSHA considered and rejected such language for the consumer product exemption. It would be very difficult from an enforcement perspective to determine when exposure to a consumer product is "significantly greater" than consumer exposure. The key elements of concern to OSHA are as stated in the consumer product exemption included in this rule—that the consumer product be used in the same manner as a consumer would use it (and therefore as intended by the manufacturer when preparing the label information), and that the duration and frequency of exposure be essentially the same as would be experienced by a consumer (and thus the label warnings would provide adequate protection.) A broader exemption than this would not be appropriate to protect workers from occupational exposures that were not anticipated by the manufacturer when the labels, and thus the protective measures, were developed.

Application to Office Products. A number of questions have been raised about the application of the rule to office products that may contain hazardous chemicals. It is OSHA's determination that office products such as pencils, pens, typewriter ribbons, and the like, are "articles" under the rule and therefore exempted, paragraph (b)(6)(iv). Employers are not therefore required to implement a program for such products. OSHA has also determined that intermittent, occasional use of a copying

machine to make copies is not covered by the rule. The copying machine would also be considered an article for purposes of this standard. However, if a firm has a copying machine operator who is responsible for handling the chemicals associated with its use, or who operates the machine frequently, that individual would be entitled to information under the rule.

Medicine. The rule, paragraph (b)(6)(vi), also includes an exemption for drugs when they are solid, and are in final form for direct administration to the patient (*i.e.*, pills or tablets). Employees handling such finished drug products would not be exposed to the chemicals involved, and would not need information other than that supplied on the container label under FDA requirements. (The State of North Carolina adopted a similar exemption in their Hazard Communication Standard, 13 NCAC s7C.101(a)(99)).

Wood dust. As OSHA has received a number of questions regarding the application of the wood and wood products exemption to wood dust, OSHA would like to reiterate its interpretation regarding the wood and wood product exemption in paragraph (b)(6)(iii) of this final rule. The wood and wood products exemption was included in the HCS for two reasons. First, the presence and identity of wood and wood products in the workplace is "unmistakable" and second, their hazards (*i.e.*, flammability or combustibility) are well-known to workers. 48 FR 53289. Because wood and wood products, characteristic hazards are self-evident, regulations requiring formal notification were not thought to be necessary. Wood and wood products "are not expected to be hazardous for purposes of this standard." *Id.* at 53335. OSHA never intended, however, that wood dust be excluded from the standard's coverage under the wood and wood products exemption. Wood dust is not generally a wood "product," but is created as a byproduct during manufacturing operations involving sawing, sanding, and

shaping of wood. Wood dust does not share solid wood products' "self-evident" hazard characteristics that supported the exemption of wood products from the HCS' coverage. Except for the chemical additives present in the wood, products such as lumber, plywood, and paper are easily recognizable in the workplace and pose a risk of fire that is obvious and well-known to the employees working with them. The potential for exposure to wood dust within the workplace, especially with regard to respirable particles, is not self-evident, nor are its hazards through inhalation so well-known that hazard communication programs are unnecessary.

"Wood dust" is a recognized health hazard, with exposure limits recommended by the American Conference of Governmental Industrial Hygienists (ACGIH) to control employee exposures to the substance. Under the provisions of the HCS, this means that wood dust is to be considered a hazardous chemical (paragraph (d)(3)(ii)), and therefore subject to the requirements of the rule including material safety data sheets and training.

(c) Definitions

The only changes to the definitions in the current HCS are those that need to be made to accomplish the expansion of the HCS.

The reference to SIC Codes 20 through 39 is being deleted from the definition of "chemical manufacturer" to be consistent with the extent scope of the rule. Any employer who produces a hazardous chemical for "use or distribution" is considered a "chemical manufacturer" under the HCS, and must prepare and provide the appropriate hazard information.

OSHA has modified the definition of "container" to exempt "engines, fuel tanks, or other operating systems in a vehicle." The Agency has received some questions regarding the need for labeling such parts of a vehicle in

applying the rule to the manufacturing sector. Expansion into non-manufacturing will greatly increase the number of vehicles involved in work operations, and thus OSHA determined that this clarification will ensure that the Agency's position regarding this issue is clear—vehicles do not have to bear labels regarding hazardous chemicals used to operate them. This does not exempt such chemicals from coverage by the rule—it simply eliminates the need to label once they are placed into the vehicle.

The definition of "distributor" has also been changed to reflect the 31864 extended scope of the rule. A "distributor" means "a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers." Among other things, distributors must transmit hazard information they receive from chemical manufacturers and importers to all their employer customers.

Under the current rule, OSHA defined "employee" as someone working in the manufacturing sector, and stated that those employees in manufacturing whose jobs did not involve routine potential exposure to hazardous chemicals would not generally be covered by the rule. Examples related to the manufacturing sector were provided. This was intended to limit the coverage primarily to those employees in the industry who were actually involved in production operations. However, since the scope of the entire standard is being expanded to cover employees in all types of work operations, the definition has been modified to clarify that workers who are exposed to hazardous chemicals as part of their assigned jobs would generally be covered under the rule, except for those who only encounter hazardous chemicals in non-routine, isolated instances. OSHA believes most office workers, and many other workers, are not exposed to the hazardous chemicals covered by the HCS in such a way that the rule would apply to those types of work opera-

tions. The rule, therefore, simply defines a covered "employee" as any "worker who is exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies" and further states that "workers such as office workers or bank tellers who encounter hazardous chemicals only in nonroutine, isolated instances are not covered." "Normal operating conditions" are those which employees encounter in performing their job duties in their assigned work areas. For example, if the receptionist in a facility receives and delivers a telephone message for someone in a different work area where hazardous chemicals are present, this does not mean that the receptionist would be covered under the rule by virtue of the one potential exposure from delivering the message. However, if performance of the receptionist's job entails walking through the production area every day, and thus being potentially exposed during the performance of regular duties, that job would be covered under the rule.

The definitions of "employer" and "importer" are also amended to indicate that all employers are covered by the standard. In addition, the definition of "employer" is amended to indicate that the term includes contractors and subcontractors. This reflects the definition of employer used in OSHA's construction standards. Similarly, the definition of "workplace" has been modified to specifically include job sites and projects.

Hazard warning. While OSHA is not modifying the definition of "hazard warning" contained in the current rule, the Agency wishes to reiterate the intent to help employers better understand and comply with the requirements. "Hazard warning" means "any words, pictures, symbols, or combination thereof which convey the hazard(s) of the chemical(s) in the container(s)." "Appropriate hazard warnings" are to be put on container labels. (*See* final rule paragraphs (f)(1)(ii) and (f)(5)(ii)). Since the rule covers "physical" and

"health" *hazards*, specific information regarding these would be required on a label to comply.

Many labels at the time the HCS was promulgated includes only precautionary statements, rather than providing necessary information about the specific hazards of the chemicals. Thus employees encountered statements such as "avoid inhalation" on virtually every chemical container, but were not provided with statements regarding what type or severity of effect inhalation could be expected to produce.

Therefore, OSHA's standard requires identity and hazard information on labels. Although employers can choose to provide additional statements. OSHA's requirements are limited to that required to convey the hazards to the workers. Under the OSHA scheme, other data regarding protective measures, first aid, etc., are to be included on the material safety data sheet or in training, rather than appearing on the label itself. This approach is in keeping with the Agency's evaluation of available data on effectiveness of labels which indicates that the more detail there is on a label, the less likely it is that employees will read and act on the information. The purpose of the label is to serve as an immediate visual warning of the chemical hazards in the workplace. *See generally*, 48 FR 53300-03).

There have been misinterpretations of the requirements made based on statements in the preamble to the current rule concerning various labeling systems (*see* 48 FR 53301). This preamble discussion involves format of labels, and is not an unqualified endorsement of any particular labeling system. It simply states that any format may be used, as long as the label includes the information regarding the chemical hazards required by the standard. It should be noted that it can be expected that some labels prepared in accordance with any of the available labeling systems can be expected to be found to be

deficient. Again, the preamble discussion cited merely reemphasized that employers are not constrained to use any particular format or wording, but are constrained by the necessity to comply with the requirements of the rule concerning the information to be provided—the identity, the hazards, and for containers leaving the workplace, the name and address of the responsible party.

The terms "physical" and "health" hazards are already defined in the rule, and these are the specific hazards that are to be "conveyed" in an "appropriate" hazard warning. There are some situations where the specific target organ effect is not known. Where this is the case, a more general warning statement would be permitted. For example, if the only information available is an LC_{50} test result, "harmful if inhaled" may be the only type of statement supported by the data and thus may be appropriate.

It will not necessarily be "appropriate" to warn on the label about every hazard listed in the MSDS. The data sheet is to address essentially everything that is known about the chemical. The selection of hazards to be highlighted on the label will involve some assessment of the weight of the evidence regarding each hazard reported on the data sheet. This does not mean, however, that only acute hazards are to be covered on the label, or that well-substantiated hazards can be omitted from the label because they appear on the data sheet.

It may be "appropriate" to provide less detailed information on the chemical hazards in an in-plant labeling system, where MSDSs and training are readily available, than on a label placed on a container leaving the workplace, where it may provide the only hazard information in certain situations and where there is no guarantee that the downstream employees handling or using the chemical will fully understand the less detailed label. This difference in appropriateness allows employers to

establish standardized in-plant labeling systems, as long as training regarding the use of these systems is conducted, and MSDSs provide the required, detailed information.

31865 *Article.* OSHA is not modifying the definition of "article" but would like to provide some clarification regarding the Agency's interpretation. Releases of very small quantities of chemicals are not considered to be covered by the rule. So if a few molecules or a trace amount are released, the item is still an article and therefore exempted. In an earlier discussion in this preamble, application of the rule to office products was discussed and it was stated that items such as pens and pencils are to be considered articles. Other examples would be: emissions from tires when in use; emissions from toner on pieces of paper; or emissions from newly varnished furniture.

Furthermore, it should be reiterated that the HCS is limited to hazardous chemicals "known to be present" (paragraph (b)(2)), and does not require any chemical analysis or testing to determine or verify such presence. *See* 48 FR 53334-35. Thus although one may assume that molecules are being emitted from an item, under the standard one does not "know" that a particular hazardous chemical is "present."

The article exemption applies solely to the ultimate end use—intermediate users which result in exposure are covered and require hazard information to be provided. The following are examples of items which would require information for intermediate use prior to being finally installed: encapsulated asbestos insulation where the normal installation involves hammering the material into openings, thus releasing the asbestos; tiles to be placed on a ship's hull which contain lead that is released during installation; and glass mercury switches to be installed in equipment, a percentage of which are expected to break during this installation process. In these cases,

installation is the "normal condition of use" for the employees installing the items, and thus hazard information is required for these intermediate uses. Once installed, these items would be articles and thus exempted.

Although installation of an item may render the exemption temporarily void (until the item is installed, information must still be provided if there is a potential for exposure), OSHA does not believe that the possibility that exposure could occur when the item is repaired or worked on need be considered in the determination of when information must be transmitted downstream. Employers of employees performing repairs must provide the best information they have concerning the potential exposures. There would be no way to ensure, for example, that a material safety data sheet prepared for a lead pipe would be available to a worker repairing the pipe some years following installation. The employer would provide the employees with general information concerning the hazards of the operations they were performing in lieu of specific information on the pipe itself.

(d) Hazard Determination

OSHA is not modifying the current rule's hazard determination requirements. The burden of evaluating chemicals to determine whether they are hazardous remains on the chemical manufacturers and importers who produce or import them and on those user employers who choose not to rely on the evaluations made by their suppliers and instead evaluate the chemicals themselves. A detailed explanation of these provisions can be found at 48 FR 53296-99, 53335-36.

(e) Written Hazard Communication Program

Under the current rule, a written hazard communication program must be developed and implemented for each workplace. Since the current rule covers fixed manufac-

turing sites, it did not appear to be necessary to specifically state that the written program be available at the site. With expansion to non-manufacturing, however, particularly in the construction industry where a firm may have multiple sites, the standard must be tailored to specifically state that the intent is to maintain the written program at each site. Employees will then be able to access the information as required.

The current written hazard communication program requirements include a provision that requires manufacturing employers to provide hazard information to on-site contractor employers who have employees who may be exposed to the hazards generated by the manufacturer (current paragraph (e)(1)(iii)). The current standard does not address the reverse situation, *i.e.*, where a contractor employer brings hazardous materials on-site, and exposes the manufacturer's employees to them. Since the expanded rule will affect more worksites with work arrangements of this type (*e.g.*, construction), and the need for an exchange of hazard information is obvious, OSHA has revised the requirements to tailor it to address the multi-employer workplace. (This was suggested in comments submitted in response to the ANPR. *See* Ex. 2-225, comments from the National Constructors Association. In addition, this situation has also been addressed in existing State right-to-know laws. *See, e.g.*, Alabama Act 85-658; Tennessee "Hazardous Chemical Right to Know Law.")

Under these provisions (paragraph (e)(2), the employers must exchange material safety data sheets, as well as information about precautionary measures necessary to protect employees and an indication of the type of labeling system in use, where exposures may occur to another employer's employees. Each employer will then have the information necessary to inform and train their employees. This will help ensure that all employees have sufficient information to protect themselves in the work-

place, regardless of which employer uses the hazardous chemical.

Consistent with the performance-orientation of the rule, the provisions do not specify how this coordination is to be accomplished. This is best left to the discretion of the parties involved. In many cases, it would probably be most efficient for the general contractor to coordinate the function. For example, the general contractor could keep and make available material safety data sheets in the office on the site.

It should be emphasized that the exchange of information is limited to those situations where exposures of other employer's employees may occur. Given the nature of multi-employer work sites in construction, there would be many situations where subcontractors responsible for various phases of the building project would not have employees present during other phases and thus no such exchange would be required. For example, if the electricians are not working near, or at the same time as, the paving contractor, then no interchange is required. But if a painting contractor's workers are using flammable solvents in an area where another subcontractor is welding pipes, this information exchange is vital to ensure proper protection of employees.

(f) Labels and Other Forms of Warning

A tailoring provision has been added concerning shipments which consist of solid metal. OSHA considers this change to be necessary since the problem addressed will occur more frequently in shipments to the nonmanufacturing sector than has been the case in the manufacturing sector. (Paragraph (f)(2)). Solid metal is often considered to be an "article" under the rule, and thus exempt. Where the metal is not an "article" since its downstream use results in hazardous chemical exposure to employees working with it, a provision has been added

which allows shippers of this type of material 31866 to send the label information once, similar to material safety data sheet transmittal, as long as the material is the same and it is being shipped to the same customer. In these situations, there should be no hazard to anyone handling the metal from the time it is produced in solid form, until the time someone works on it in a way that releases a chemical hazard. Since the label information transmitted would only reflect the chemical hazards released when it is later worked on, the label would not provide any hazard information that is needed by those handling the material in transit. It must be emphasized that this exception is only for the solid metal itself—any hazardous chemicals present in conjunction with the metal in such a form that employees may be exposed when handling the material (*e.g.*, cutting fluids, lubricants, and greases), require labels with each shipment. This tailoring provision, therefore, does not diminish worker protection—workers get the hazard information they need.

(g) Material Safety Data Sheets

Under the hazard determination provisions, a requirement is included which indicates that there are situations where the percentage cut-off for mixtures would not apply—when the released chemical is particularly hazardous, or when it could exceed an established permissible exposure limit or Threshold Limit Value when released (paragraph (d)(5)(iv)). Although this is clearly a requirement of the rule, *see also* 48 FR 53336, the material safety data sheet provisions for disclosure of hazardous ingredient identities did not address that particular situation. Clearly it was OSHA's intent to have all hazardous ingredients of mixtures listed on a material safety data sheet, even those in very small concentrations, when the hazard determination provisions of paragraph (d) mandate that they are to be considered hazardous for pur-

poses of the HCS. As noted in the HCS preamble discussion of the material safety data sheet provisions: "Employers must also list ingredients present in concentrations of less than one percent if there is evidence that the permissible exposure limit may be exceeded or if it could present a health hazard in those concentrations." *Id.* at 53337. This obvious oversight has been corrected by a minor amendment to the rule. Paragraph (g)(2)(i)(C)(2).

Another situation which raises practicality concerns because of the expansion of the scope of the rule involves employers who purchase hazardous chemicals from local retail distributors, rather than directly from the chemical manufacturer or importer, or from wholesale distributors as is more commonly done in the manufacturing sector. Under the current HCS, distributors of hazardous chemicals must automatically provide commercial customers material safety data sheets (paragraph (g)(7)). Retail distributors, however, often sell to businesses and the general public and frequently have no way of knowing who a particular purchaser is. Under the current rule, retail distributors might have to give material safety data sheets to each customer to ensure that commercial customers get the information they need under the HCS. A specific statement regarding retail distributors is, therefore, included in paragraph (g)(7) to address this practical problem. Those retail distributors who sell hazardous chemicals to employers must provide a material safety data sheet upon request, and must post a sign or otherwise inform the employers that an MSDS is available. According to Schneider Hardware of Banksville, Inc., this is a reasonable approach (Ex. 2-179):

> If OSHA does require commercial customers to get information through a retail outlet, I do not foresee any problems with that arrangement. The manufacturers could supply us with the information, as they are required to now for shipments to manufac-

> turing plants, and we could make it available to customers upon request. We would merely keep the sheets in a file drawer and post a sign informing customers of their availability. We have less than 100 chemicals that would probably be affected, and keeping information on those would require at most, one file drawer. It would not be burdensome.

The retail distributors likely affected are those selling building supplies, hardware, etc. Retail distributors will have to assess their product lines, and whether or not they have commercial accounts, to determine whether they must comply with this provision. It is clear that most other types of retail establishments (*e.g.*, grocery stores, clothing stores, etc.) would not.

With regard to the maintenance of material safety data sheets so that they are readily available to employees, whereas manufacturing facilities are generally fixed work sites with fixed locations for these materials, in some types of nonmanufacturing work operations, employees must travel between work areas during a workshift. For example, employees involved in servicing oil and gas wells may have a central office location, but then travel by truck to the wells to perform their work. These remote locations may not have any staff, or may not have an office facility. OSHA has added a provision to the MSDS requirements to allow MSDSs to be kept at a central location in this type of situation, as long as the employer ensures that the employees can immediately obtain the information in an emergency, paragraph (g)(9). OSHA believes that this provision tailors the HCS so that it remains practical, yet effective, in getting workers the hazard information they need. This was also supported by a number of ANPR commenters (*see, e.g.*, Exs. 2-83, 2-107, 2-114, 2-116, and 2-117).

The current rule, as well as the expanded standard, allows downstream employers to rely on upstream chem-

ical manufacturers and importers to provide MSDSs. However, there is a duty for downstream users to request an MSDS when they don't receive one at the time of the first shipment. There have been some questions regarding how the downstream user will know a data sheet is required without doing a hazard evaluation. Such an evaluation is not necessary. If the label indicates a hazard, the employer will know he needs a data sheet and must request one if it is not received. If there are no hazards on the label, the downstream user can assume the product is not hazardous and a data sheet is not required.

(h) Employee Information and Training

OSHA is not making any modifications to the current rule's information and training provisions. These requirements remain performance-oriented and designed so that each employer will adequately address the hazards posed by chemicals in the workplace. An explanation of these provisions can be found at 48 FR 53310-12, 53337-38.

One question that does arise regarding training is whether it needs to be done specifically on each chemical, or whether employers can train regarding categories of hazards. Either method would be acceptable. *See* 48 FR 53312, 53338. If employees are exposed to a small number of chemicals, the employer may wish to discuss the particular hazards to each one. Where there are large numbers of chemicals, the training regarding hazards could be done on categories (*e.g.*, flammable liquids; carcinogens), with employees being referred to substance-specific information on the labels and MSDSs. Similarly, the re-training occurs when the hazard changes, not just when a new chemical is introduced into the workplace. If the new chemical has hazards which employees have been trained about, no re-training occurs. If the chemical has a hazard they have not 31867 been trained about, re-training would be limited to that hazard.

(i) Trade Secrets

Paragraph (i)(11) of the current rule states that "[i]f, following the issuance of a citation and any protective orders, the chemical manufacturer, importer, or employer continues to withhold the information, the matter is referrable to the Occupational Safety and Health Review Commission for enforcement of the citation. . . ." This provision was worded in such a manner that it left the impression that OSHA could refer the matter to the Review Commission. This is incorrect as a matter of law. An enforcement proceeding is referred to the Review Commission when a citation is issued by OSHA, and is subsequently contested by the employer receiving the citation. Therefore, OSHA has made a technical amendment to paragraph (i)(11) to reflect the applicable procedural law.

(j) Effective Dates

The expansion of the rule to cover all employers becomes effective nine months from the date of promulgation of the final standard. Since the chemical hazard information for labels and material safety data sheets has already been generated in the manufacturing sector, and in many cases has also been distributed in non-manufacturing due to State law requirements and voluntary transmittal by suppliers, one month should be sufficient time for chemical manufacturers, importers, and distributors to initiate provision of material safety data sheets to other distributors and to customers in the non-manufacturing sector. An additional eight months is being provided for non-manufacturers to complete preparation of a written hazard communication program for each facility and to conduct employee training. It should be noted that this eight month period for compliance only applies to those employers which are newly covered under the expanded provisions—employers in SIC Codes 20 through 39 are covered under the current HCS and are already required

to be in compliance with the provisions of that rule. Those tailoring provisions that apply to manufacturing workplaces, such as the consumer product exemption, go into effect immediately for those facilities.

Appendices A and B

OSHA is not amending Appendix A's discussion of the health hazards posed by chemicals, or Appendix B's discussion of hazard determination. They remain applicable to all chemical manufacturers, importers, and employers performing hazard determinations.

Appendix C

The reference sources listed in this non-mandatory appendix have been updated to reflect currently available sources.

Appendix D

The recent rulemaking on trade secrets added a new Appendix D regarding the evaluation of the validity of trade secret claims. 51 FR 34590. The full text of this appendix has been reprinted in this document as well.

III. Analyses of Regulatory Impact, Regulatory Flexibility, and Environmental Impact.

The following is a summary of the regulatory impact and regulatory flexibility analysis prepared by OSHA for the revision of the Hazard Communication Standard which extends the scope of the existing standard to the non-manufacturing sector. The full text of the document may be examined and copied in OSHA's Docket Office, 200 Constitution Avenue, N.W., Room N3670, Washington, DC 20210; telephone (202) 523-7894.

Economic Analysis

As part of OSHA's efforts to gather information concerning the economic feasibility of extending the coverage of the HCS to include workplaces in the nonmanufactur-

ing sector, the JACA Corporation performed a study examining the benefits, costs, and overall economic impact of such a revision. This report was used as the basis for the regulatory impact analysis prepared by OSHA.

The analysis reflects the extent to which employers in the nonmanufacturing sector are currently subject to state right-to-know laws and are voluntarily implementing their own hazard communication programs. The analysis also takes into account OSHA's existing policy regarding the use of consumer products and training requirements already imposed on employers by other OSHA standards. With respect to consumer products covered by the HCS, OSHA Instruction CHL 2-2.38A ("Inspection Procedures for the Hazard Communication Standard, 29 CFR 1910. 1200") states:

> A common sense approach must be employed whenever a product is used in a manner similar to which it could be used by a consumer, thus resulting in levels of exposure comparable to consumer exposure. The frequency and duration of use should be considered. For example, it may not be necessary to have a data sheet for a can of cleanser used to clean the sink in an employee restroom. However, if such cleanser is used in large quantities to clean process equipment, it should be addressed in the Hazard Communication Program.

This policy has been incorporated into the revisions to the HCS, and was taken into account when evaluating data describing the number of hazardous chemicals in the various two-digit SIC groups that could be affected by extension of the HCS to the nonmanufacturing sector.

Assessing the net impact of the training provisions required identifying and deducting the costs of existing OSHA standards which already require employers to provide the types of information and training activities prescribed in the HCS. This was done for construction (§ 1926.21), shipbreaking (§ 1915.97), marine terminals

(§ 1917.22), and longshoring (§ 1918.86). However, it was not possible to separately identify and deduct the existing training costs for substance-specific standards that currently apply to the nonmanufacturing sector. Thus, the compliance costs presented in this analysis are somewhat overstated.

In extending the rule for manufacturing to the nonmanufacturing sector, OSHA has made revisions to reflect unique aspects of some work operations. For example, the standard allows MSDSs to be maintained at central locations in circumstances where employees must travel between work operations during a workshift, provided that the information can be obtained immediately in an emergency. This provision is expected to lower costs in SIC groups 07, 08, 09, 13, 46, 49, and 73. (*See* Table 1 for a description of the SICs.)

The standard also allows for limited coverage in those work situations where employees handle chemicals in sealed containers that are not opened under normal conditions of use, and thus have little potential for measurable exposures. Employers would be required to leave warning labels on containers, and make available any MSDSs received with the containers. Employers would also have to be trained in accordance with the standard, with particular emphasis on procedures to follow if there is a spill or leak of the hazardous chemicals in the normally sealed containers. Affected establishments would not have to make special efforts to obtain and keep MSDSs that are not received with the chemicals, and no written plan for complying with the HCS would be required. This provision is expected to 31868 result in lower costs in SIC groups 42, 44, 45, 47, 51, and 52.

Thus the changes made to establish more appropriate provisions for unique work situations should result in lower costs than would be experienced if the HCS for manufacturing were extended to the nonmanufacturing sector without revision.

Table 1.—SIC Groups Covered in the OSHA Analysis

Division A. Agriculture, Forestry, and Fishing

Major Group 01. Agricultural production—crops

Major Group 02. Agricultural production—livestock

Major Group 07. Agricultural services

Major Group 08. Forestry

Major Group 09. Fishing, hunting, and trapping

Division B. Mining

Major Group 13. Oil and gas extraction

Division C. Construction

Major Group 15. Building construction—general contractors and operative builders

Major Group 16. Construction other than building construction—general contractors

Major Group 17. Construction—special trade contractors

Division E. Transportation, Communication, Electric, Gas, and Sanitary Services

Major Group 40. Railroad transportation

Major Group 41. Local and suburban transmit and interurban highway passenger transportation

Major Group 42. Motor freight transportation and warehousing

Major Group 44. Water transportation

Major Group 45. Transportation by air

Major Group 46. Pipe lines, except natural gas

Major Group 47. Transportation services

Major Group 48. Communication

Major Group 49. Electric, gas, and sanitary services

Division F. Wholesale Trade

Major Group 50. Wholesale trade—durable goods

Major Group 51. Wholesale trade—nondurable goods

Division G. Retail Trade

Major Group 52. Building materials, hardware, garden supply, and mobile home dealers

Major Group 53. General merchandise stores

Major Group 54. Food stores

Major Group 55. Automotive dealers and gasoline service stations

Major Group 56. Apparel and accessory stores

Major Group 57. Furniture, home furnishing, and equipment stores

Major Group 58. Eating and drinking places

Major Group 59. Miscellaneous retail

Division H. Finance, Insurance, and Real Estate

Major Group 60. Banking

Major Group 61. Credit agencies other than banks

Major Group 62. Security and commodity brokers, dealers, exchanges, and services

Major Group 63. Insurance

Major Group 64. Insurance agents, brokers, and service

Major Group 65. Real estate

Major Group 66. Combinations of real estate, insurance, loans, law office

Major Group 67. Holding and other investment offices

Division I. Services

Major Group 70. Hotels, rooming houses, camps, and other lodging places

Major Group 72. Personal services.

Major Group 73. Business services

Major Group 75. Automotive repair, services and garages

Major Group 76. Miscellaneous repair services

Major Group 78. Motion pictures

Major Group 79. Amusement and recreation services, except motion pictures

Major Group 80. Health Services

Major Group 81. Legal Services

Major Group 82. Education Services

Major Group 83. Social Services

Major Group 84. Museums, art galleries, botanical and zoological gardens

Major Group 86. Membership organizations

Major Group 89. Miscellaneous services

The analysis of the benefits, costs, and economic impacts of extending the HCS to the nonmanufacturing sector are projected for 40 years. As indicated, the analysis reflects requirements of state right-to-know laws and voluntarily implemented hazard communication programs.

Risk Evaluation/Benefits Analysis

For this analysis OSHA estimated the percentage of workers exposed to hazardous chemicals. The percentage and numbers of exposed workers are shown in Table 2 [1] by SIC group. The analysis of risks and benefits proceeds from the current annual incidence of chemical-related injuries and illnesses in the nonmanufacturing sector. For

[1] Tables 2 to 10 appear at the end of this article.

workers in this sector, measures of acute chemical source injuries and illnesses included nonlost workday (NLWD) injuries (13,671) and LWD illnesses (38,249); and fatalities (102). Measures for chronic illnesses include: chronic illness cases (17,153), cancer cases (25,388), and cancer deaths (12,890). The cancer cases category includes cancer deaths. (Note that tables used in the computer models for this analysis may vary slightly from these figures due to rounding.)

The benefits of the standard result from its expected reduction of occupational injuries and illnesses that are chemically related. Specifically, OSHA projects that the standard will avert 20 percent of these injuries and illnesses. (Five percent of all cancer cases are assumed to be occupationally related; the 20 percent reduction is applied to this 5 percent of all cases among occupationally exposed workers in the nonmanufacturing sector.) However, the full reduction of chronic illnesses and cancers will not occur immediately; rather, the reduction for these cases is phased in over time. For chronic illnesses, the standard is expected to reduce 1 percent of the cases in the first year, 2 percent in the second year, and so on, until it reaches the full reduction of 20 percent. For cancer cases and cancer deaths, the standard is expected not to have an effect for the first 10 years, then it is expected to reduce 2 percent of the cases in the eleventh year, 4 percent in the twelfth year, and so on until it reaches the full reduction of 20 percent.

Benefits were monetized using two independent approaches. The first took into account medical costs and lost earnings incurred by each victim. This "human capital" approach resulted in first-year benefits of $56.3 million, and a 40 year present value of $6.66 billion (summarized in Table 3).

A second estimate of benefits was made using the "willingness-to-pay" approach. This approach resulted in first-

year benefits of $568.7 million, and a 40 year present value of $54.6 billion (Table 3).

To provide comparability with the estimates of compliance costs, benefits were attributed to the states with right-to-know laws in proportion to the share of hazard communication costs projected for firms in those states. Under the "human capital" approach the present value of the 40 year stream of benefits from the extension of the HCS, after deducting states with right-to-know-laws, is $3.80 billion (1985 dollars). Under the willingness-to-pay approach, the present value of the 40-year stream of benefits from extension of the HCS is $31.0 billion, after deducting the amount attributable to states with right-to-know laws.

The monetized benefits of hazard communication in the nonmanufacturing sector, whether monetized in terms of human capital or willingness to pay, are presented after discounting (at 10 percent). Such discounting does not convey the magnitude of the expected number of injuries, illnesses and deaths that should be averted by the extension of hazard communication to the nonmanufacturing sector. The actual number of NLWD cases, LWD cases, chronic illness cases, cancer cases, cancer deaths, and other fatalities that are expected to be averted in the first, 31869 twentieth, and fortieth years are presented in Table 4.

The numbers of cases presented in Table 4 are projections of cases that will be averted by the state right-to-know laws and the extension of the HCS. Approximately 43 percent of these cases will be averted as a result of the hazard communication (*i.e.*, right-to-know) laws of the states. The remaining 57 percent uniquely relate to the extension of HCS and translate into the following: 148,400 cancer cases and 74,200 cancer deaths, 119,200 chronic disabling illnesses, 448,500 lost work day cases, 702,000 non-lost work day cases, and about 653 non-

cancer fatalities avoided over the next 40 years. This estimate is believed to be conservative since OSHA assumed that only 5 percent of all cancers are occupationally related.

The original Regulatory Impact Analysis (RIA) for the HCS in manufacturing included estimates of benefits arising from the reduction of the incidence of chemical fires in the manufacturing sector. Using the RIA's methodology and newer data obtained from the U.S. Fire Administration's National Fire Incidence Reporting System, OSHA has determined that extension of the HCS to the nonmanufacturing sector would yield first-year benefits (*i.e.*, the value of property damages and losses avoided) of $1.6 million (1985 dollars). For the twentieth and fortieth years, the estimates are $2.2 and $2.9 million, respectively. The present value of the 40-year stream of benefits is $20.3 million (using a 10 percent discount rate).

Extending the HCS to the nonmanufacturing sector will also yield benefits by eliminating the need for employers to comply with multiple state and local right-to-know laws with differing requirements. The estimated benefits for the first year amount to $39.6 million (1985 dollars). For the twentieth and fortieth years, the benefits are $69.5 and $125.5 million, respectively. The present value of the 40-year stream of benefits is $578 million (using a 10 percent discount rate).

Compliance Costs

Compliance costs were estimated for five items: preparation of a written hazard communication program; container labeling; provision of MSDSs; maintenance of MSDSs; and information and training.

Table 5 provides a summary of total regulatory costs, the costs attributable to state right-to-know laws and the costs attributable to the extension of the OSHA standard.

Costs are presented for the first, twentieth, and fortieth year of the standard, as well as in terms of total present value over forty years. Present values were calculated using a 10 percent discount rate. Table 6 presents the costs by provision.

The total cost attributable to hazard communication laws during the first year the expanded HCS is effective is $1.28 billion (1985 dollars). The first year cost associated with compliance with state right-to-know laws is $597.3 million and $687.3 million with the Federal HCS. The present value of the total HCS-related compliance costs over the 40 year period is $1.57 billion.

Recordkeeping activities are required in the maintenance of MSDSs. As shown in Table 6, the Year 1 costs for this function amount to $44.9 million (1985 dollars). The costs for the twentieth and fortieth years are $6.0 and $13.3 million. The present value of the costs over 40 years is $84.8 million.

Economic Impacts

In order to assess the potential economic impacts of expanding the hazard communication standard, OSHA studied the impact of the first year costs on typical establishments that have not implemented any of the provisions. No allowance was made for partial compliance. If establishments can pass through or absorb first year costs, it is assumed that they can afford the minimal recurring costs related to training new employees and the introduction of new hazards. Table 7 presents the average compliance costs, assuming no current compliance, for typical establishments in each SIC Code. Typical establishments in the preponderance for SICs (over 80 percent) would incur compliance costs of less than $700 in the first year.

In only one of the SICs does the average total first year cost exceed $800 per establishment. The average

first year cost per exposed employee in all SICs is less than $250, or less than $5.00 per worker per week.

Table 8 presents a comparison of the post-tax compliance costs to a typical firm's revenues and profits. A typical establishment's pre-tax compliance cost will be a negligible percentage (less than one-half to one percent) of the establishment's average annual revenue in over 96 percent of the SICs. The only exceptions, SIC 63 (Social Service) and SIC 86 (Membership Organizations), are primarily composed of nonprofit establishments that are characterized by relatively inelastic demand for their services. Given the magnitude of the compliance costs in relation to revenue, and the fact that the affected industry sectors are predominantly service providers, which are necessarily characterized by localized markets, it appears likely that most firms will pass the compliance costs on to their customers. The post-tax compliance cost as a percent of profits is less than two percent in most (over 80 percent) of the SICs. Typical firms in these SICs should be able to absorb the costs even if they cannot pass them on to their customers. Given the small absolute magnitude of the compliance costs, and the fact that the analysis was conducted using first year compliance costs which are significantly higher than the recurring compliance costs for subsequent years, the expansion of the hazard communication standard should have little or no economic impact on typical firms.

Community Right-to-Know

The cost of extending the Superfund Amendments and Reauthorization Act (SARA) requirements for community right-to-know to the non-manufacturing sector was also estimated. Under Title III of SARA, establishments holding a given hazardous chemical in amounts greater than specified threshold quantities must report these chemicals and their quantities to State and local emergency planning committees and the local fire department.

Cost estimates were based on EPA's projected phase-in threshold quantities of 10,000 pounds of hazardous chemicals in the first two years, and 500 pounds in the third and subsequent years that the requirements apply to the non-manufacturing sector. The estimated costs for the first and second years are $8,614,300 and $3,524,000, respectively. Third and fourth year costs were estimated to be $63,492,800 and $32,736,300.

The economic impact of extending SARA to nonmanufacturing was also estimated by OSHA. The third year average total cost of SARA was combined with OSHA's recurring average total costs of the Hazard Communication Standard to estimate the impact. The analysis indicated that the economic impact per facility of extending SARA to nonmanufacturing is minor, and that costs incurred by affected establishments could be passed on to the consumer. OSHA believes that the extension of SARA to nonmanufacturing will not affect the feasibility of the Hazard Communication Standard.

Regulatory Flexibility

As is shown in Table 9, a majority of establishments in all of the potentially impacted SICs are small businesses with fewer than 20 employees. Thus, the average compliance costs for small firms **31870** are very similar to those for typical firms. No disproportionate economic impact is foreseen for small firms.

Most establishments in the potentially affected SICs are service providers, which typically compete on the basis of many factors (*e.g.*, location, specialized service, customer relations, etc.) in addition to price. Assuming all firms try to pass their compliance cost on to their customers, minor price differentials of less than one-half of one percent, shown in Table 10, are unlikely to adversely affect the overall competitive position of small entities.

As can be seen from Table 10, the cost differential between small and large firms in over 80 percent of the SICs is anticipated to be less than 0.2 percent of revenue. In SICs 83 and 86 the difference is about 2 percent. However, these SICs are dominated by non-profit firms which are less likely to be subject to price competition.

Environmental Impacts

At the time the current HCS was promulgated in the Federal Register (48 FR 53280), OSHA stated that the standard was unlikely to result in the occurrence of significant health or environmental impacts outside of the workplace. The extension of the HCS does not entail any change from the current HCS in terms of impacts outside the workplace. As concluded previously, the labeling of containers will not have a direct or significant impact on air or water quality, land or energy use, or solid waste disposal outside of the workplace. Similarly, the requirements for preparation of a written compliance plan, provision and maintenance of MSDSs, and provision of information and training should have no adverse environmental impact.

IV. Clearance of Information Collection Requirements

On March 31, 1983, the Office of Management and Budget (OMB) published a new 5 CFR Part 1320, implementing the information collection provisions of the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.* (48 FR 13666). Part 1320, which became effective on April 30, 1983, sets forth procedures for agencies to follow in obtaining OMB clearance for information collection requirements. The sections of the Hazard Communication Standard which may create recordkeeping requirements are paragraphs (d) hazard determination; (e) written hazard communication program; (f) labels and other appropriate forms of warning; (g) material safety data sheets; (h) information and training; and (i) trade secrets.

In accordance with the provisions of the Paperwork Reduction Act and the regulations issued pursuant thereto, OSHA certifies that it has submitted the information collection requirements contained in its rule on hazard communication to OMB for review under section 3504(h) of that Act.

V. State Plan Applicability

The 25 States with their own OSHA-approved occupational safety and health plans must adopt a comparable standard within six months of the publication date of a final standard. These States include: Alaska, Arizona, California, Connecticut (for State and local government employees only), Hawaii, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Nevada, New Mexico, New York (for State and local government employees only), North Carolina, Oregon, Puerto Rico, South Carolina, Tennessee, Utah, Vermont, Virginia, Virgin Islands, Washington, and Wyoming. Until such time as a State standard is promulgated, Federal OSHA will provide interim enforcement assistance, as appropriate. (Thirteen (13) of these States (Alaska, California, Iowa, Maryland, Michigan, Minnesota, New Mexico, North Carolina, Oregon, Tennessee, Vermont, Washington, and Wyoming) have already expanded the scope of their hazard communication standard/right-to-know law to cover private sector, non-manufacturing workplaces.)

Although a State HCS becomes effective in accordance with State promulgation provisions, and is enforceable upon promulgation, OSHA must also review and approve the standard to assure that it is "at least as effective" as the Federal standard. OSHA intends to closely scrutinize State standards submitted under current or future State plans to assure not only equal or greater effectiveness, but also that any additional requirements do not conflict with, or adversely affect, the effectiveness of the national application of OSHA's standard. Because the

HCS is "applicable to products" in that it permits the distribution and use of hazardous chemicals in commerce only if they are in labeled containers accompanied by material safety data sheets, OSHA must determine in its review whether any State plan standard provisions which differ from the Federal are "required by compelling local conditions and do not unduly burden interstate commerce." Section 18(c) of the Act, 29 U.S.C. 667(c).

VI. Authority, Signature, and the Final Rule

This document was prepared under the direction of John A. Pendergrass, Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, 200 Constitution Avenue, NW., Washington, DC 20210.

For the reasons set out in the preamble, and under the authority of section 41 of the Longshore and Harbor Workers' Compensation Act (33 U.S.C. 941), section 107 of the Contract Work Hours and Safety Standards Act (Construction Safety Act) (40 U.S.C. 333), sections 4, 6 and 8 of the Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657), Secretary of Labor's Order No. 9-83 (48 FR 35736) and 29 CFR Part 1911, and 5 U.S.C. 553, the Occupational Safety and Health Administration hereby amends Parts 1910, 1915, 1917, 1918, 1926, and 1928 of Title 29 of the Code of Federal Regulations, as set forth below.

List of Subjects in 29 CFR Parts 1910, 1915, 1917, 1918, 1926, and 1928

Hazard communication, Occupational safety and health, Right-to-know, Labeling, Material safety data sheets; Employee training.

Signed at Washington, DC, this 18th day of August 1987.

John A. Pendergrass,

Assistant Secretary for Occupational Safety and Health.

TABLE 2.—WORKER EXPOSURE TO HAZARDOUS CHEMICALS

Industry	Total number of establishment	Total employment	Percent of workers exposed to hazardous chemicals	Number of exposed employees
SIC 01	31,739	504,025	70	352,818
SIC 02	10,994	126,039	70	88,227
31871				
SIC 07	65,704	459,479	70	321,635
SIC 08	2,117	20,223	70	14,156
SIC 09	3,886	13,549	20	2,710
SIC 13	31,572	591,714	70	414,200
SIC 15	166,012	1,137,853	70	796,497
SIC 16	44,702	791,892	70	554,324
SIC 17	320,208	2,406,916	70	1,684,841
SIC 40	18,539	324,206	40	129,682
SIC 41	15,539	285,578	20	57,116
SIC 42	99,805	1,323,495	20	264,699
SIC 44	8,346	178,013	70	124,609
SIC 45	8,691	490,395	40	196,158
SIC 46	959	18,405	60	11,043
SIC 47	30,783	267,113	40	106,845
SIC 48	22,910	1,321,116	5	66,056
SIC 49	15,571	890,586	40	356,234
SIC 50	300,972	3,357,168	10	335,717
SIC 51	191,745	2,295,451	25	573,863
SIC 52	66,756	662,051	50	331,026
SIC 53	29,818	2,230,449	5	111,522
SIC 54	137,393	2,696,839	20	539,368
SIC 55	173,902	1,850,359	60	1,110,215
SIC 56	99,022	1,004,666	5	50,233
SIC 57	93,338	714,264	5	35,713
SIC 58	309,650	5,479,633	25	1,369,908
SIC 59	261,694	2,133,614	20	426,723
SIC 60	24,949	1,681,408	5	84,070
SIC 61	43,408	733,201	5	36,660
SIC 62	17,995	346,214	5	17,311
SIC 63	30,139	1,190,103	5	59,505
SIC 64	96,706	536,223	5	26,811
SIC 65	191,400	1,077,550	5	53,878

TABLE 2.—WORKER EXPOSURE TO HAZARDOUS CHEMICALS—Continued

Industry	Total number of establishment	Total employment	Percent of workers exposed to hazardous chemicals	Number of exposed employees
SIC 66	2,937	13,752	5	688
SIC 67	15,792	138,488	5	6,924
SIC 70	44,697	1,273,343	25	318,336
SIC 72	158,272	1,068,670	50	534,335
SIC 73	284,684	4,092,820	50	2,046,410
SIC 75	121,431	713,798	50	356,899
SIC 76	57,900	316,365	60	189,819
SIC 78	15,338	216,806	30	65,042
SIC 79	58,064	757,287	20	151,457
SIC 80	365,758	6,167,908	60	3,700,745
SIC 81	119,861	670,317	5	33,516
SIC 82	23,280	1,174,052	10	117,405
SIC 83	66,380	1,182,651	5	59,133
SIC 84	1,592	39,021	25	9,755
SIC 86	83,774	724,283	5	36,214
SIC 89	117,155	1,200,885	5	60,044
Totals	4,503,879	58,890,236		18,391,096

Source: U.S. Department of Labor, OSHA, Office of Regulatory Analysis.

TABLE 3.—ESTIMATED BENEFITS OF HAZARD COMMUNICATION
[Millions of 1985 dollars]

Type of injury/illness	Benefits—Year			
	1	20	40	TPV
HUMAN CAPITAL APPROACH				
NLWD:				
Lost earnings	0.7	1.3	2.5	9.3
Medical costs	1.7	4.6	13.4	30.3
LWD:				
31872				
Lost earnings	15.2	28.3	57.1	209.3
Medical costs	10.9	29.2	86.5	192.2
Chronic:				
Lost earnings	20.5	722.8	1,365.8	2,967.5
Medical costs	2.8	143.4	404.1	582.8
Cancer:				
Lost earnings	0	651.6	1,309.6	1,735.2
Medical costs	0	298.9	906.4	875.8
Fatalities:				
Lost earnings	4.4	7.3	13.0	56.6
Total	56.3	1,837.3	4,158.3	6,659.1
WILLINGNESS-TO-PAY APPROACH				
NLWD	59.6	107.8	211.9	804.5
LWD	374.4	686.4	1,371.1	5,099.8
Chronic	61.7	2,173.7	4,121.6	8,924.3
Cancer	0	14,529.0	29,651.2	38,812.0
Fatalities	72.9	123.4	255.3	946.9
Total	568.7	17,620.7	35,581.2	54,587.4

Source: JACA Corporation Report.

TABLE 4.—INJURIES, ILLNESSES, AND FATALITIES AVERTED BY HAZARD COMMUNICATION IN THE NONMANUFACTURING SECTOR

Year	1	20	40	Commulative total
	FEDERAL AND STATE STANDARDS COMBINED			
NLWD	17,000	30,800	60,600	1,354,500
LWD	10,700	19,600	39,200	865,800
Chronic	150	6,200	11,800	230,100
Cancer cases	0	8,200	17,000	286,500
Cancer deaths	0	4,100	8,500	143,300
Noncancer deaths	0	20	80	1,260
	IMPACT OF FEDERAL STANDARD ALONE			
NLWD	8,800	16,000	31,400	702,000
LWD	5,500	10,200	20,300	448,500
Chronic	78	3,200	6,100	119,200
Cancer cases	0	4,248	8,806	148,400
Cancer deaths	0	2,100	4,400	74,200
Noncancer deaths	0	10	41	653

Source: U.S. Department of Labor, OSHA, Office of Regulatory Analysis.

TABLE 5.—SUMMARY OF HAZARD COMMUNICATION COSTS
[Millions of 1985 dollars]

Year	Total	State	OSHA
1	1,284.5	597.3	687.2
20	214.5	101.3	113.2
40	384.0	184.0	200.0
Total present value	2,926.4	1,356.3	1,570.1

Source: U.S. Department of Labor, OHSA, Office of Regulatory Analysis.

TABLE 6.—SUMMARY OF FEDERAL HCS COSTS BY PROVISION
[Millions of 1985 dollars]

Year	Maintain MSDS's	Labeling	Written	Training	Provide MSDS's	Totals
1	44.9	12.8	137.4	472.9	19.3	687.2
20	6.0	20.3	5.7	78.7	2.5	113.2
40	13.3	35.2	9.4	136.5	5.6	200.0
TPV	84.8	170.9	170.9	1054.6	88.9	1570.1

Source: U.S. Department of Labor, OSHA, Office of Regulatory Analysis.

TABLE 7.—SUMMARY OF HCS COSTS PER ESTABLISHMENT NOT IN COMPLIANCE WITH HCS
[1985 dollars]

	First year		Second year	
Industry	Average costs per establishment	Average costs per exposed employee	Average costs per establishment	Average costs per exposed employee
SIC 01	502	45	32	3
SIC 02	475	59	23	3
SIC 07	490	100	28	6
SIC 08	358	54	26	4
SIC 09	304	242	6	5
SIC 13	497	38	72	5
SIC 15	150	31	12	3
SIC 16	225	18	34	3
SIC 17	169	32	14	3
SIC 40	603	86	51	7
SIC 41	285	76	11	3
SIC 42	273	98	12	4
SIC 44	442	30	55	4
SIC 45	892	40	72	3
SIC 46	461	40	55	5
SIC 47	398	115	15	4
SIC 48	319	50	15	2
SIC 49	798	35	64	3

TABLE 7.—SUMMARY OF HCS COSTS PER ESTARLISHMENT NOT IN COMPLIANCE WITH HCS—Continued

[1985 dollars]

Industry	First year		Second year	
	Average costs per establishment	Average costs per exposed employee	Average costs per establishment	Average costs per exposed employee
SIC 50	472	238	14	7
SIC 51	700	234	32	11
SIC 52	335	68	20	4
SIC 53	372	50	27	4
SIC 54	323	82	18	5
SIC 55	437	68	31	5
SIC 56	265	149	6	3
SIC 57	288	190	6	4
SIC 58	337	76	17	4
SIC 59	321	184	7	4
SIC 60	410	61	21	3
SIC 61	217	76	9	3
SIC 62	312	79	18	5
SIC 63	250	46	16	3
SIC 64	236	155	5	3
SIC 65	306	186	8	5
SIC 66	238	181	5	4
SIC 67	415	167	12	5
SIC 70	408	57	37	5
SIC 72	500	148	16	5
SIC 73	444	62	43	6
SIC 75	381	130	14	5
SIC 76	325	99	15	5
SIC 78	351	83	26	6
SIC 79	346	117	20	7
SIC 80	581	57	57	6
SIC 81	242	153	7	5
SIC 82	287	46	10	2
SIC 83	337	132	11	4
SIC 84	608	99	39	6
SIC 86	273	149	6	3
31874				
SIC 89	312	146	10	5

Source: U.S. Department of Labor, OSHA, Office of Regulatory Analysis.

TABLE 8.—ANALYSIS OF POST-TAX FIRST-YEAR COMPLIANCE COSTS
[1985 dollars]

Industry	Average annual revenue per establishment	Average cost as a percent of revenue per establishment	Average net income per establishment	Average post-tax cost per establishment	Post tax cost as a percent of net income per establishment
SIC 01	2,794,100	0.018	103,382	377	0.36
SIC 02	11,275,400	0.004	417,190	356	0.09
SIC 07	286,600	0.171	7,165	368	5.13
SIC 08	1,689,100	0.021	42,228	268	0.64
SIC 09	797,500	0.038	19,938	228	1.14
SIC 13	6,185,800	0.008	346,405	373	0.11
SIC 15	816,700	0.018	19,601	113	0.57
SIC 16	1,419,700	0.016	56,788	169	0.30
SIC 17	372,400	0.045	10,800	127	1.17
SIC 40	2,584,100	0.023	111,116	453	0.41
SIC 41	411,400	0.069	13,165	214	1.62
SIC 42	730,100	0.037	21,903	205	0.94
SIC 44	2,214,300	0.020	141,715	331	0.23
SIC 45	5,900,000	0.015	70,800	669	0.94
SIC 46	20,569,600	0.002	1,069,619	346	0.03
SIC 47	831,900	0.048	14,974	299	1.99
SIC 48	5,347,900	0.006	390,397	239	0.06
SIC 49	16,269,000	0.005	732,105	599	0.08
SIC 50	1,866,900	0.025	28,004	354	1.26
SIC 51	3,371,500	0.021	57,316	525	0.92
SIC 52	793,800	0.042	20,639	251	1.22
SIC 53	5,702,000	0.007	136,848	279	0.20
SIC 54	2,089,700	0.015	25,076	242	0.96
SIC 55	2,016,100	0.022	16,129	327	2.03
SIC 56	507,600	0.052	19,796	199	1.00
SIC 57	371,400	0.078	11,513	216	1.88
SIC 58	383,500	0.088	11,122	252	2.27
SIC 59	829,100	0.039	20,728	241	1.16
SIC 60	14,970,800	0.003	509,007	307	0.06
SIC 61	2,585,300	0.008	41,365	163	0.39
SIC 62	1,856,900	0.017	135,554	234	0.17

TABLE 8.—ANALYSIS OF POST-TAX FIRST-YEAR COMPLIANCE COSTS —Continued

Industry	Average annual revenue per establishment	Average cost as a percent of revenue per establishment	Average net income per establishment	Average post-tax cost per establishment	Post tax cost as a percent of net income per-establishment
SIC 63	12,911,400	0.002	438,988	187	0.04
SIC 64	220,400	0.107	15,869	177	1.11
SIC 65	338,400	0.090	27,749	230	0.83
SIC 66	661,600	0.036	54,251	178	0.33
SIC 67	798,300	0.052	167,643	311	0.19
SIC 70	607,000	0.067	34,599	306	0.88
SIC 72	228,500	0.219	10,283	375	3.64
SIC 73	531,600	0.084	21,264	333	1.57
SIC 75	351,800	0.108	8,795	286	3.25
SIC 76	187,100	0.174	7,671	244	3.18
SIC 78	815,900	0.043	31,820	263	0.83
SIC 79	782,100	0.044	51,619	260	0.50
SIC 80	198,200	0.293	6,342	436	6.87
SIC 81	456,000	0.053	10,032	182	1.81
SIC 82	NA	0.168	NA	215	NA
SIC 83	NA	1.763	NA	252	NA
SIC 83	NA	1.763	NA	252	NA
SIC 84	NA	0.094	NA	456	NA
SIC 86	NA	1.007	NA	205	NA
31875					
SIC 89	290,500	0.107	11,039	234	2.12

Source: U.S. Department of Labor, OSHA, Office of Regulatory Analysis.

TABLE 9.—ESTABLISHMENTS WITH FEWER THAN TWENTY EMPLOYEES

SIC code	Total number of establishments	Number of establishments with 1 to 19 employees	Percent of establishments with 1 to 19 employees
01	31,739	27,440	86
02	10,994	9,574	87
07	65,704	61,928	94
08	2,117	1,852	87
09	2,160	2,088	97
13	31,572	26,037	82
15	166,012	154,819	93
16	44,702	37,484	84
17	320,208	294,850	92
40	18,539	15,756	85
41	15,267	11,998	79
42	94,561	80,822	85
44	8,346	6,917	83
45	8,691	6,514	75
46	959	724	75
47	30,783	28,420	92
48	10,319	6,612	64
49	15,571	10,922	70
50	169,451	133,233	79
51	191,745	166,562	87
52	66,756	60,097	90
53	14,909	8,963	60
54	137,393	114,738	84
55	173,902	152,920	88
56	28,181	23,874	85
57	23,582	20,474	87
58	309,650	241,282	78
59	244,849	227,803	93
60	12,475	6,318	51
61	12,912	9,561	74
62	4,380	3,079	70
63	10,998	7,263	66
64	17,577	15,608	89
65	32,714	28,099	86

TABLE 9.—ESTABLISHMENTS WITH FEWER THAN TWENTY EMPLOYEES—Continued

SIC code	Total number of establishments	Number of establishments with 1 to 19 employees	Percent of establishments with 1 to 19 employees
66	524	488	93
67	2,790	2,239	80
70	44,697	34,693	78
72	158,272	149,812	95
73	284,684	249,553	88
75	121,431	116,334	96
76	57,900	55,543	96
78	15,338	13,314	87
79	50,981	42,916	84
80	365,758	338,396	93
81	21,210	18,659	88
82	18,661	11,197	60
83	23,148	17,068	74
84	1,592	1,250	79
86	19,757	16,416	83
89	28,103	23,179	82

Source: U.S. Department of Labor, OSHA, Office of Regulatory Analysis.

[a] From Chapter 5 of the JACA Report [4].

[b] Column 2 divided by Column 1.

TABLE 10.—ANALYSIS OF IMPACT ON SMALLEST VERSUS LARGEST ESTABLISHMENTS

[Comparing average costs as a percent of revenue]

SIC code	Average cost as a percent of revenue per establishment 250 + employees	Average cost as a percent of revenue per establishment 1-19 employees	Difference in cost as a percent of revenue due to size of establishments
01	0.003	0.044	0.040
02	0.001	0.009	0.008
07	0.038	0.189	0.151
08	0.007	0.018	0.011
09	0.002	0.021	0.019
13	0.002	0.035	0.033
15	0.003	0.044	0.042
16	0.007	0.064	0.057
17	0.017	0.065	0.048
40	0.008	0.082	0.075
41	0.007	0.248	0.240
42	0.007	0.103	0.096
44	0.007	0.060	0.053
45	0.009	0.105	0.096
46	0.000	0.174	0.174
47	0.003	0.101	0.098
48	0.002	0.041	0.039
31876			
49	0.002	0.049	0.047
50	0.003	0.037	0.034
51	0.006	0.038	0.032
52	0.008	0.046	0.038
53	0.002	0.029	0.026
54	0.002	0.054	0.052
55	0.006	0.044	0.038
56	0.002	0.104	0.102
57	0.003	0.117	0.114
58	0.008	0.158	0.150
59	0.003	0.055	0.051
60	0.001	0.012	0.011
61	0.000	0.038	0.038

TABLE 10.—ANALYSIS OF IMPACT ON SMALLEST VERSUS LARGEST ESTABLISHMENTS—Continued

SIC code	Average cost as a percent of revenue per establishment 250 + employees	Average cost as a percent of revenue per establishment 1-19 employees	Difference in cost as a percent of revenue due to size of establishments
62	0.003	0.028	0.025
63	0.000	0.069	0.069
64	0.002	0.179	0.177
65	0.005	0.124	0.119
66	0.001	0.054	0.053
67	0.003	0.096	0.093
70	0.021	0.283	0.262
72	0.007	0.346	0.339
73	0.028	0.204	0.175
75	0.004	0.151	0.148
76	0.099	0.205	0.106
78	0.007	0.113	0.106
79	0.016	0.071	0.055
80	0.269	0 370	0.101
81	0.118	0.077	—0.041
82	0.025	0.915	0.890
83	0.428	2.293	1.865
84	0.033	0.259	0.226
86	0.035	2.109	2.074
89	0.008	0.210	0.202

Source: U.S. Department of Labor, OSHA, Office of Regulatory Analysis.

OSHA is amending Parts 1910, 1915, 1917, 1918, 1926, and 1928 of Title 29 of the Code of Federal Regulations as follows:

PART 1910—OCCUPATIONAL SAFETY AND HEALTH STANDARDS

1. The authority citation for Subpart Z of Part 1910 continues to read as follows:

Authority: Secs. 6, 8, Occupational Safety and Health Act (29 U.S.C. 655, 657); Secretary of Labor's Order No. 12-71 (36 FR 8754); 8-76 (41 FR 2509); or 9-83 (48 FR 35736) as applicable; and 29 CFR Part 1911.

Section 1910.1000 Tables Z-1, Z-2, Z-3 also issued under 5 U.S.C. 553.

Section 1910.1000 not issued under 29 CFR Part 1911, except for "Arsenic" and "Cotton Dust" listings in Table Z-1.

Section 1910.1001 not issued under Sec. 107 of Contract Work Hours and Safety Standards Act, 40 U.S.C. 333.

Section 1910.1002 not issued under 29 U.S.C. 655 or 29 CFR Part 1911; also issued under 5 U.S.C. 553.

Sections 1910.1003 through 1910.1018 also issued under 29 U.S.C. 653.

Section 1910.1025 also issued under 29 U.S.C. 653 and 5 U.S.C. 553.

Section 1910.1043 also issued under 5 U.S.C. 551 *et seq.*

Sections 1910.1045 and 1910.1047 also issued under 29 U.S.C. 653.

Sections 1910.1200, 1910.1499 and 1910.1500 also issued under 5 U.S.C. 553.

PART 1915—OCCUPATIONAL SAFETY AND HEALTH STANDARDS FOR SHIP-YARD EMPLOYMENT

2. The authority citation for Part 1915 is revised to read as follows:

Authority: Sec. 41, Longshore and Harbor Workers' Compensation Act (33 U.S.C. 941); secs. 4, 6, 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order No. 12-71 (36 FR 8754), 8-76 (41 FR 25059), or 9-83 (48 FR 35736), as applicable; 39 CFR Part 1911.

Section 1915.99 also issued under 5 U.S.C. 553.

PART 1917—MARINE TERMINALS

3. The authority citation for Part 1917 is revised to read as follows:

Authority: Sec. 41. Longshore and Harbor Workers' Compensation Act (33 U.S.C. 941); secs. 4, 6, 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order No. 12-71 (36 FR 8754), 8-76 (41 FR 25059), or 9-83 (48 FR 35736), as applicable; 29 CFR Part 1911.

Section 1917.28 also issued under 5 U.S.C. 553.

PART 1918—SAFETY AND HEALTH REGULATIONS FOR LONGSHORING

4. The authority citation for Part 1918 is revised to read as follows:

Authority: Sec. 41. Longshore and Harbor Workers' Compensation Act (33 U.S.C. 941); 31877 secs. 4, 6, 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order No. 12-71 (36 FR 8754), 8-76 (41 FR 25059), or 9-83 (48 FR 35736), as applicable.

Section 1918.90 also issued under 5 U.S.C. 553 and 29 CFR Part 1911.

PART 1926—SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION

5. The authority citation for Subpart D of Part 1926 is revised to read as follows:

Authority: Sec. 107, Contract Work Hours and Safety Standards Act (Construction Safety Act) (40 U.S.C. 333); secs. 4, 6, 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order No. 12-71 (36 FR 8754), 8-76 (41 FR 25059), or 9-83 (48 FR 35736), as applicable.

Section 1926.59 also issued under 5 U.S.C. 553 and 29 CFR Part 1911.

PART 1928—OCCUPATIONAL SAFETY AND HEALTH STANDARDS FOR AGRICULTURE

6. The authority citation for Part 1928 is revised to read as follows:

Authority: Secs. 6 and 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 655, 657); Secretary of Labor's Orders 12-71 (36 FR 8754), 8-76 (41 FR 25059), or 9-83 (48 FR 35736), as applicable; 29 CFR Part 1911.

Section 1928.21 also issued under 5 U.S.C. 553.

PARTS 1910, 1915, 1917, 1918, 1926 and 1928—[AMENDED]

7. Parts 1910, 1915, 1917, 1918, and 1926 are amended by revising § 1910.1200 as set forth below, and by adding §§ 1915.99, 1917.28, 1918.90, and 1926.59 to contain the identical text of the revised § 1910.1200, including Apendices, A, B, C, and D of 1910.1200:

§ —— Hazard communication.

(a) *Purpose.* (1) The purpose of this section is to ensure that the hazards of all chemicals produced or im-

ported are evaluated, and that information concerning their hazards is transmitted to employers and employees. This transmittal of information is to be accomplished by means of comprehensive hazard communication programs, which are to include container labeling and other forms of warning, material safety data sheets and employee training.

(2) This occupational safety and health standard is intended to address comprehensively the issue of evaluating the potential hazards of chemicals, and communicating information concerning hazards and appropriate protective measures to employees, and to preempt any legal requirements of a state, or political subdivision of a state, pertaining to the subject. Evaluating the potential hazards of chemicals, and communicating information concerning hazards and appropriate protective measures to employees, may include, for example, but is not limited to, provisions for: developing and maintaining a written hazard communication program for the workplace, including lists of hazardous chemicals present; labeling of containers of chemicals in the workplace, as well as of containers of chemicals being shipped to other workplaces; preparation and distribution of material safety data sheets to employees and downstream employers; and development and implementation of employee training programs regarding hazards of chemicals and protective measures. Under section 18 of the Act, no state or political subdivision of a state may adopt or enforce, through any court or agency, any requirement relating to the issue addressed by this Federal standard, except pursuant to a Federally-approved state plan.

(b) *Scope and application.* (1) This section requires chemical manufacturers or importers to assess the hazards of chemicals which they produce or import, and all employers to provide information to their employees about the hazardous chemicals to which they are exposed, by means of a hazard communication program, labels

and other forms of warning, material safety data sheets, and information and training. In addition, this section requires distributors to transmit the required information to employers.

(2) This section applies to any chemical which is known to be present in the workplace in such a manner that employees may be exposed under normal conditions of use or in a foreseeable emergency.

(3) This section applies to laboratories only as follows:

(i) Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;

(ii) Employers shall maintain any material safety data sheets that are received with incoming shipments of hazardous chemicals, and ensure that they are readily accessible to laboratory employees; and,

(iii) Employers shall ensure that laboratory employees are apprised of the hazards of the chemicals in their workplaces in accordance with paragraph (h) of this section.

(4) In work operations where employees only handle chemicals in sealed containers which are not opened under normal conditions of use (such as are found in marine cargo handling, warehousing, or retail sales), this section applies to these operations only as follows:

(i) Employers shall ensure that labels on incoming containers of hazardous chemicals are not removed or defaced;

(ii) Employers shall maintain copies of any material safety data sheets that are received with incoming shipments of the sealed containers of hazardous chemicals, shall obtain a material safety data sheet for sealed containers of hazardous chemicals received without a ma-

terial safety data sheet if an employee requests the material safety data sheet, and shall ensure that the material safety data sheets are readily accessible during each work shift to employees when they are in their work area(s); and,

(iii) Employers shall ensure that employees are provided with information and training in accordance with paragraph (h) of this section (except for the location and availability of the written hazard communication program under paragraph (h)(1)(iii)), to the extent necessary to protect them in the event of a spill or leak of a hazardous chemical from a sealed container.

(5) This section does not require labeling of the following chemicals:

(i) Any pesticide as such term is defined in the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136 et seq.), when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Environmental Protection Agency;

(ii) Any food, food additive, color additive, drug, cosmetic, or medical, or veterinary device, including materials intended for use as ingredients in such products (e.g. flavors and fragrances), as such terms are defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 *et seq.*) and regulations issued under that Act, when they are subject to the labeling requirements under that Act by the Food and Drug Administration;

(iii) Any distilled spirits (beverage alcohols), wine, or malt beverage intended for nonindustrial use, as such terms are defined in the Federal Alcohol Administration Act (27 U.S.C. 201 *et seq.*) and regulations issued under that Act, when subject to the labeling requirements of that Act and labeling regulations issued under that Act by the Bureau of Alcohol Tobacco, and Firearms; and,

(iv) Any consumer product or hazardous substances as those terms are defined in the Consumer Product

Safety Act (15 U.S.C. 2051 et seq.) and Federal Hazardous Substances Act (15 U.S.C. 1261 et seq.) respectively, when subject to a consumer product safety standard or labeling requirement of those Acts, or regulations issued under those Acts by 31878 the Consumer Product Safety Commission.

(6) This section does not apply to:

(i) Any hazardous waste as such term is defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6901 et seq.), when subject to regulations issued under that Act by the Environmental Protection Agency;

(ii) Tobacco or tobacco products;

(iii) Wood or wood products;

(iv) Articles;

(v) Food, drugs, cosmetics, or alcoholic beverages in a retail establishment which are packaged for sale to consumers;

(vi) Foods, drugs, or cosmetics intended for personal consumption by employees while in the workplace;

(vii) Any consumer product or hazardous substance, as those terms are defined in the Consumer Product Safety Act (15 U.S.C. 2051 *et seq.*) and Federal Hazardous Substances Act (15 U.S.C. 1261 *et seq.*) respectively, where the employer can demonstrate it is used in the workplace in the same manner as normal consumer use, and which use results in a duration and frequency of exposure which is not greater than exposures experienced by consumers; and,

(viii) Any drug, as that term is defined in the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 301 *et seq.*), when it is in solid, final form for direct administration to the patient (i.e. tablets or pills).

(c) *Definitions.*

"Article" means a manufactured item: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which does not release, or otherwise result in exposure to, a hazardous chemical, under normal conditions of use.

"Assistant Secretary" means the Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, or designee.

"Chemical" means any element, chemical compound or mixture of elements and/or compounds.

"Chemical manufacturer" means an employer with a workplace where chemical(s) are produced for use or distribution.

"Chemical name" means the scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the chemical for the purpose of conducting a hazard evaluation.

"Combustible liquid" means any liquid having a flashpoint at or above 100 °F (37.8 °C), but below 200 °F (93.3 °C), except any mixture having components with flashpoints of 200 °F (93.3 °C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

"Common name" means any designation or identification such as code name, code number, trade name, brand name or generic name used to identify a chemical other than by its chemical name.

"Compressed gas" means:

(i) A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70 °F (21.1 °C); or

(ii) a gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 130 °F (54.4 °C) regardless of the pressure at 70 °F (21.1 °C); or

(iii) A liquid having a vapor pressure exceeding 40 psi at 100 °F (37.8 °C) as determined by ASTM D-323-72.

"Container" means any bag, barrel, bottle, box, can, cylinder, drum, reaction vessel, storage tank, or the like that contains a hazardous chemical. For purposes of this section, pipes or piping systems, and engines, fuel tanks, or other operating systems in a vehicle, are not considered to be containers.

"Designated representative" means any individual or organization to whom an employee gives written authorization to exercise such employee's rights under this section. A recognized or certified collective bargaining agent shall be treated automatically as a designated representative without regard to written employee authorization.

"Director" means the Director, National Institute for Occupational Safety and Health, U.S. Department of Health and Human Services, or designee.

"Distributor" means a business, other than a chemical manufacturer or importer, which supplies hazardous chemicals to other distributors or to employers.

"Employee" means a worker who may be exposed to hazardous chemicals under normal operating conditions or in foreseeable emergencies. Workers such as office workers or bank tellers who encounter hazardous chemicals only in non-routine, isolated instances are not covered.

"Employer" means a person engaged in a business where chemicals are either used, distributed, or are produced for use or distribution, including a contractor or subcontractor.

"Explosive" means a chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

"Exposure" or "exposed" means that an employee is subjected to a hazardous chemical in the course of employment through any route of entry (inhalation, ingestion, skin contact or absorption, etc.), and includes potential (e.g. accidental or possible) exposure.

"Flammable" means a chemical that falls into one of the following categories:

(i) "Aerosol, flammable" means an aerosol that, when tested by the method described in 16 CFR 1500.45, yields a flame projection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening;

(ii) "Gas, flammable" means:

(A) A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen (13) percent by volume or less; or

(B) A gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve (12) percent by volume, regardless of the lower limit;

(iii) "Liquid, flammable" means any liquid having a flashpoint below 100 °F (37.8 °C), except any mixture having components with flashpoints of 100 °F (37.8 °C) or higher, the total of which make up 99 percent or more of the total volume of the mixture;

(iv) "Solid, flammable" means a solid, other than a blasting agent or explosive as defined in § 190.109(a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be

ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be a flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

"Flashpoint" means the minimum temperature at which a liquid gives off a vapor in sufficient concentration to ignite when tested as follows:

(i) Tagliabue Closed Tester (See American National Standard Method of Test for Flash Point by Tag Closed Tester, Z11.24-1979 (ASTM D 56-79)) for liquids with a viscosity of less than 45 Saybolt University Seconds (SUS) at 100 °F (37.8 °C), that do not contain suspended solids and do not have a 31879 tendency to form a surface film under test; or

(ii) Pensky-Martens Closed Tester (See American National Standard Method of Test for Flash Point by Pensky-Martens Closed Tester, Z11.7-1979 (ASTM D 93-79)) for liquids with a viscosity equal to or greater than 45 SUS at 100 °F (37.8 °C), or that contain suspended solids, or that have a tendency to form a surface film under test; or

(iii) Setaflash Closed Tester (see American National Standard Method of Test for Flash Point by Setaflash Closed Tester (ASTMD 3278-78))

Organic peroxides, which undergo autoaccelerating thermal decomposition, are excluded from any of the flashpoint determination methods specified above.

"Foreseeable emergency" means any potential occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment which could result in an uncontrolled release of a hazardous chemical into the workplace.

"Hazardous chemical" means any chemical which is a physical hazard or a health hazard.

"Hazard warning" means any words, pictures, symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the hazard(s) of the chemical(s) in the container(s).

"Health hazard" means a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes. Appendix A provides further definitions and explanations of the scope of health hazards covered by this section, and Appendix B describes the criteria to be used to determine whether or not a chemical is to be considered hazardous for purposes of this standard.

"Identity" means any chemical or common name which is indicated on the material safety data sheet (MSDS) for the chemical. The identity used shall permit cross-references to be made among the required list of hazardous chemicals, the label and the MSDS.

"Immediate use" means that the hazardous chemical will be under the control of and used only by the person who transfers it from a labeled container and only within the work shift in which it is transferred.

"Importer" means the first business with employees within the Customs Territory of the United States which receives hazardous chemicals produced in other countries for the purpose of supplying them to distributors or employers within the United States.

"Label" means any written, printed, or graphic material, displayed on or affixed to containers of hazardous chemicals.

"Material safety data sheet (MSDS)" means written or printed material concerning a hazardous chemical which is prepared in accordance with paragraph (g) of this section.

"Mixture" means any combination of two or more chemicals if the combination is not, in whole or in part, the result of a chemical reaction.

"Organic peroxide" means an organic compound that contains the bivalent -O-O-structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms has been replaced by an organic radical.

"Oxidizer" means a chemical other than a blasting agent or explosive as defined in § 1910.109(a), that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

"Physical hazard" means a chemical for which there is scientifically valid evidence that it is a combustible liquid, a compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.

"Produce" means to manufacture, process, formulate, or repackage.

"Pyrophoric" means a chemical that will ignite spontaneously in air at a temperature of 130 °F (54.4 °C) or below.

"Responsible party" means someone who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

"Specific chemical identity" means the chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

"Trade secret" means any confidential formula, pattern, process, device, information or compilation of information that is used in an employer's business, and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it. Appendix D sets out the criteria to be used in evaluating trade secrets.

"Unstable (reactive)" means a chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure or temperature.

"Use" means to package, handle, react, or transfer.

"Water-reactive" means a chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

"Work area" means a room or defined space in a workplace where hazardous chemicals are produced or used, and where employees are present.

"Workplace" means an establishment, job site, or project, at one geographical location containing one or more work areas.

(d) *Hazard determination.* (1) Chemical manufacturers and importers shall evaluate chemicals produced in their workplaces or imported by them to determine if they are hazardous. Employers are not required to evaluate chemicals unless they choose not to rely on the evaluation performed by the chemical manufacturer or importer for the chemical to satisfy this requirement.

(2) Chemical manufacturers, importers or employers evaluating chemicals shall identify and consider the available scientific evidence concerning such hazards. For health hazards, evidence which is statistically significant and which is based on at least one positive study conducted in accordance with established scientific principles is considered to be sufficient to establish a hazardous effect if the results of the study meet the definitions of health hazards in this section. Appendix A shall be consulted for the scope of health hazards covered, and Appendix B shall be consulted for the criteria to be followed with respect to the completeness of the evaluation, and the data to be reported.

(3) The chemical manufacturer, importer or employer evaluating chemicals shall treat the following sources as establishing that the chemicals listed in them are hazardous:

(i) 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA); or,

(ii) *Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment*, American Conference of Governmental Industrial Hygienists (ACGIH) (latest edition).

31880 The chemical manufacturer, importer, or employer is still responsible for evaluating the hazards associated with the chemicals in these source lists in accordance with the requirements of this standard.

(4) Chemical manufacturers, importers and employers evaluating chemicals shall treat the following sources as establishing that a chemical is a carcinogen or potential carcinogen for hazard communication purposes:

(i) National Toxicology Program (NTP), *Annual Report on Carcinogens* (latest edition);

(ii) International Agency for Research on Cancer (IARC) *Monographs* (latest editions); or

(iii) 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration.

Note.—The *Registry of Toxic Effects of Chemical Substances* published by the National Institute for Occupational Safety and Health indicates whether a chemical has been found by NTP or IARC to be a potential carcinogen.

(5) The chemical manufacturer, importer or employer shall determine the hazards of mixtures of chemicals as follows:

(i) If a mixture has been tested as a whole to determine its hazards, the results of such testing shall be used to determine whether the mixture is hazardous;

(ii) If a mixture has not been tested as a whole to determine whether the mixture is a health hazard, the mixture shall be assumed to present the same health hazards as do the components which comprise one percent (by weight or volume) or greater of the mixture, except that the mixture shall be assumed to present a carcinogenic hazard if it contains a component in concentrations of 0.1 percent or greater which is considered to be a carcinogen under paragraph (d)(4) of this section;

(iii) If a mixture has not been tested as a whole to determine whether the mixture is a physical hazard, the chemical manufacturer, importer, or employer may use whatever scientifically valid data is available to evaluate the physical hazard potential of the mixture; and,

(iv) If the chemical manufacturer, importer, or employer has evidence to indicate that a component present in the mixture in concentrations of less than one percent (or in the case of carcinogens, less than 0.1 percent) could be released in concentrations which would exceed an established OSHA permissible exposure limit or ACGIH Threshold Limit Value, or could present a health hazard to employees in those concentrations, the mixture shall be assumed to present the same hazard.

(6) Chemical manufacturers, importers, or employers evaluating chemicals shall describe in writing the procedures they use to determine the hazards of the chemical they evaluate. The written procedures are to be made available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director. The written description may be incorporated into the written hazard communication program required under paragraph (e) of this section.

(e) *Written hazard communication program.* (1) Employers shall develop, implement, and maintain at the workplace, a written hazard communication program for their workplaces which at least describes how the criteria specified in paragraphs (f), (g), and (h) of this section for labels and other forms of warning, material safety data sheets, and employee information and training will be met, and which also includes the following:

(i) A list of the hazardous chemicals known to be present using an identity that is referenced on the appropriate material safety data sheet (the list may be compiled for the workplace as a whole or for individual work areas); and,

(ii) The methods the employer will use to inform employees of the hazards of non-routine tasks (for example, the cleaning of reactor vessels), and the hazards associated with chemicals contained in unlabeled pipes in their work areas.

(2) *Multi-employer workplaces.* Employers who produce, use, or store hazardous chemicals at a workplace in such a way that the employees of other employer(s) may be exposed (for example, employees of a construction contractor working on-site) shall additionally ensure that the hazard communication programs developed and implemented under this paragraph (e) include the following:

(i) The methods the employer will use to provide the other employer(s) with a copy of the material safety data

sheet, or to make it available at a central location in the workplace, for each hazardous chemical the other employer(s)' employees may be exposed to while working;

(ii) The methods the employer will use to inform the other employer(s) of any precautionary measures that need to be taken to protect employees during the workplace's normal operating conditions and in foreseeable emergencies; and,

(iii) The methods the employer will use to inform the other employer(s) of the labeling system used in the workplace.

(3) The employer may rely on an existing hazard communication program to comply with these requirements, provided that it meets the criteria established in this paragraph (e).

(4) The employer shall make the written hazard communication program available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director, in accordance with the requirements of 29 CFR 1910.20(e).

(f) *Labels and other forms of warning.* (1) The chemical manufacturer, importer, or distributor shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged or marked with the following information:

(i) Identity of the hazardous chemical(s);

(ii) Appropriate hazard warnings; and

(iii) Name and address of the chemical manufacturer, importer, or other responsible party.

(2) For solid metal (such as a steel beam or a metal casting) that is not exempted as an article due to its downstream use, the required label may be transmitted to the customer at the time of the initial shipment, and need not be included with subsequent shipments to the same

employer unless the information on the label changes. The label may be transmitted with the initial shipment itself, or with the material safety data sheet that is to be provided prior to or at the time of the first shipment. This exception to requiring labels on every container of hazardous chemicals is only for the solid metal itself and does not apply to hazardous chemicals used in conjunction with, or known to be present with, the metal and to which employees handling the metal may be exposed (for example, cutting fluids or lubricants).

(3) Chemical manufacturers, importers, or distributors shall ensure that each container of hazardous chemicals leaving the workplace is labeled, tagged, or marked in accordance with this section in a manner which does not conflict with the requirements of the Hazardous Materials Transportation Act (49 U.S.C. 1801 *et seq.*) and regulations issued under that Act by the Department of Transportation.

(4) If the hazardous chemical is regulated by OSHA in a substance-specific health standard, the chemical manufacturer, importer, distributor or employer shall ensure that the labels or 31881 other forms of warning used are in accordance with the requirements of that standard.

(5) Except as provided in paragraphs (f)(6) and (f)(7) the employer shall ensure that each container of hazardous chemicals in the workplace is labeled, tagged or marked with the following information:

(i) Identity of the hazardous chemical(s) contained therein; and

(ii) Appropriate hazard warnings.

(6) The employer may use signs, placards, process sheets, batch tickets, operating procedures, or other such written materials in lieu of affixing labels to individual stationary process containers, as long as the alternative method identifies the containers to which it is applicable

and conveys the information required by paragraph (f)(5) of this section to be on a label. The written materials shall be readily accessible to the employees in their work area throughout each work shift.

(7) The employer is not required to label portable containers into which hazardous chemicals are transferred from labeled containers, and which are intended only for the immediate use of the employee who performs the transfer.

(8) The employer shall not remove or deface existing labels on incoming containers of hazardous chemicals, unless the container is immediately marked with the required information.

(9) The employer shall ensure that labels or other forms of warning are legible, in English, and prominently displayed on the container, or readily available in the work area throughout each work shift. Employers having employees who speak other languages may add the information in their language to the material presented, as long as the information is presented in English as well.

(10) The chemical manufacturer, importer, distributor or employer need not affix new labels to comply with this section if existing labels already convey the required information.

(g) *Material safety data sheets.* (1) Chemical manufacturers and importers shall obtain or develop a material safety data sheet for each hazardous chemical they produce or import. Employers shall have a material safety data sheet for each hazardous chemical which they use.

(2) Each material safety data sheet shall be in English and shall contain at least the following information:

(i) The identity used on the label, and, except as provided for in paragraph (i) of this section on trade secrets:

(A) If the hazardous chemical is a single substance, its chemical and common name(s);

(B) If the hazardous chemical is a mixture which has been tested as a whole to determine its hazards, the chemical and common name(s) of the ingredients which contribute to these known hazards, and the common name(s) of the mixture itself; or,

(C) If the hazardous chemical is a mixture which has not been tested as a whole:

(*1*) The chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise 1% or greater of the composition, except that chemicals identified as carcinogens under paragraph (d)(4) of this section shall be listed if the concentrations are 0.1% or greater; and,

(*2*) The chemical and common name(s) of all ingredients which have been determined to be health hazards, and which comprise less than 1% (0.1% for carcinogens) of the mixture, if there is evidence that the ingredient(s) could be released from the mixture in concentrations which would exceed an established OSHA permissible exposure limit or ACGIH Threshold Limit Value, or could present a health hazard to employees; and,

(*3*) The chemical and common name(s) of all ingredients which have been determined to present a physical hazard when present in the mixture;

(ii) Physical and chemical characteristics of the hazardous chemical (such as vapor pressure, flash point);

(iii) The physical hazards of the hazardous chemical, including the potential for fire, explosion, and reactivity;

(iv) The health hazards of the hazardous chemical, including signs and symptoms of exposure, and any medical conditions which are generally recognized as being aggravated by exposure to the chemical;

(v) The primary route(s) of entry;

(vi) The OSHA permissible exposure limit, ACGIH Threshold Limit Value, and any other exposure limit used or recommended by the chemical manufacturer, importer, or employer preparing the material safety data sheet, where available;

(vii) Whether the hazardous chemical is listed in the National Toxicology Program (NTP) *Annual Report on Carcinogens* (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) *Monographs* (latest editions), or by OSHA;

(viii) Any generally applicable precautions for safe handling and use which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, including appropriate hygienic practices, protective measures during repair and maintenance of contaminated equipment, and procedures for clean-up of spills and leaks;

(ix) Any generally applicable control measures which are known to the chemical manufacturer, importer or employer preparing the material safety data sheet, such as appropriate engineering controls, work practices, or personal protective equipment;

(x) Emergency and first aid procedures;

(xi) The date of preparation of the material safety data sheet or the last change to it; and,

(xii) The name, address and telephone number of the chemical manufacturer, importer, employer or other responsible party preparing or distributing the material safety data sheet, who can provide additional information on the hazardous chemical and appropriate emergency procedures, if necessary.

(3) If not relevant information is found for any given category on the material safety data sheet, the chemical

manufacturer, importer or employer preparing the material safety data sheet shall mark it to indicate that no applicable information was found.

(4) Where complex mixtures have similar hazards and contents (i.e. the chemical ingredients are essentially the same, but the specific composition varies from mixture to mixture), the chemical manufacturer, importer or employer may prepare one material safety data sheet to apply to all of these similar mixtures.

(5) The chemical manufacturer, importer or employer preparing the material safety data sheet shall ensure that the information recorded accurately reflects the scientific evidence used in making the hazard determination. If the chemical manufacturer, importer or employer preparing the material safety data sheet becomes newly aware of any significant information regarding the hazards of a chemical, or ways to protect against the hazards, this new information shall be added to the material safety data sheet within three months. If the chemical is not currently being produced or imported the chemical manufacturer or importer shall add the information to the material safety data sheet before the chemical is introduced into the workplace again.

(6) Chemical manufacturers or importers shall ensure that distributors and employers are provided an appropriate material safety data sheet with their initial shipment, and with the first shipment after a material safety 31882 data sheet is updated. The chemical manufacturer or importer shall either provide material safety data sheets with the shipped containers or send them to the employer prior to or at the time of the shipment. If the material safety data sheet is not provided with a shipment that has been labeled as a hazardous chemical, the employer shall obtain one from the chemical manufacturer, importer, or distributor as soon as possible.

(7) Distributors shall ensure that material safety data sheets, and updated information, are provided to other

distributors and employers. Retail distributors which sell hazardous chemicals to commercial customers shall provide a material safety data sheet to such employers upon request, and shall post a sign or otherwise inform them that a material safety data sheet is available. Chemical manufacturers, importers, and distributors need not provide material safety data sheets to retail distributors which have informed them that the retail distributor does not sell the product to commercial customers or open the sealed container to use it in their own workplaces.

(8) The employer shall maintain copies of the required material safety data sheets for each hazardous chemical in the workplace, and shall ensure that they are readily accessible during each work shift to employees when they are in their work area(s).

(9) Where employees must travel between workplaces during a workshift, *i.e.*, their work is carried out at more than one geographical location, the material safety data sheets may be kept at a central location at the primary workplace facility. In this situation, the employer shall ensure that employees can immediately obtain the required information in an emergency.

(10) Material safety data sheets may be kept in any form, including operating procedures, and may be designed to cover groups of hazardous chemicals in a work area where it may be more appropriate to address the hazards of a process rather than individual hazardous chemicals. However, the employer shall ensure that in all cases the required information is provided for each hazardous chemical, and is readily accessible during each work shift to employees when they are in their work areas(s).

(11) Material safety data sheets shall also be made readily available, upon request, to designated representatives and to the Assistant Secretary, in accordance with the requirements of 29 CFR 1910.20(e). The Director

shall also be given access to material safety data sheets in the same manner.

(h) *Employee information and training.* Employers shall provide employees with information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new hazard is introduced into their work area.

(1) *Information.* Employees shall be informed of:

(i) The requirements of this section;

(ii) Any operations in their work area where hazardous chemicals are present; and,

(iii) The location and availability of the written hazard communication program, including the required list(s) of hazardous chemicals, and material safety data sheets required by this section.

(2) *Training.* Employee training shall include at least:

(i) Methods and observations that may be used to detect the presence or release of a hazardous chemical in the work area (such as monitoring conducted by the employer, continuous monitoring devices, visual appearance or odor of hazardous chemicals when being released, etc.);

(ii) The physical and health hazards of the chemicals in the work area;

(iii) The measures employees can take to protect themselves from these hazards, including specific procedures the employer has implemented to protect employees from exposure to hazardous chemicals, such as appropriate work practices, emergency procedures, and personal protective equipment to be used; and,

(iv) The details of the hazard communication program developed by the employer, including an explanation of the labeling system and the material safety data sheet, and how employees can obtain and use the appropriate hazard information.

(i) *Trade secrets.* (1) The chemical manufacturer, importer, or employer may withhold the specific chemical identity, including the chemical name and other specific identification of a hazardous chemical, from the material safety data sheet, provided that:

(i) The claim that the information withheld is a trade secret can be supported;

(ii) Information contained in the material safety data sheet concerning the properties and effects of the hazardous chemicals is disclosed;

(iii) The material safety data sheet indicates that the specific chemical identity is being withheld as a trade secret; and,

(iv) The specific chemical identity is made available to health professionals, employees, and designated representatives in accordance with the applicable provisions of this paragraph.

(2) Where a treating physician or nurse determines that a medical emergency exists and the specific chemical identity of a hazardous chemical is necessary for emergency or first-aid treatment, the chemical manufacturer, importer, or employer shall immediately disclose the specific chemical identity of a trade secret chemical to that treating physician or nurse, regardless of the existence of a written statement of need of a confidentiality agreement. The chemical manufacturer, importer, or employer may require a written statement of need and confidentiality agreement, in accordance with the provisions of paragraphs (i)(3) and (4) of this section, as soon as circumstances permit.

(3) In non-emergency situations, a chemical manufacturer, importer, or employer shall, upon request, disclose a specific chemical identity, otherwise permitted to be withheld under paragraph (i)(1) of this section, to a health professional (i.e. physician, industrial hygienist,

toxicologist, epidemiologist, or occupational health nurse) providing medical or other occupational health services to exposed employee(s), and to employees or designated representatives, if:

(i) The request is in writing;

(ii) The request describes with reasonable detail one or more of the following occupational health needs for the information:

(A) To assess the hazards of the chemicals to which employees will be exposed;

(B) To conduct or assess sampling of the workplace atmosphere to determine employee exposure levels;

(C) To conduct pre-assignment or periodic medical surveillance of exposed employees;

(D) To provide medical treatment to exposed employees;

(E) To select or assess appropriate personal protective equipment for exposed employees;

(F) To design or assess engineering controls or other protective measures for exposed employees; and,

(G) To conduct studies to determine the health effects of exposure.

(iii) The request explains in detail why the disclosure of the specific chemical identity is essential and that, in lieu thereof, the disclosure of the following information to the health professional, employee, or designated representative, would not satisfy the purposes described in paragraph (i)(3)(ii) of this action:

31583 (A) The properties and effects of the chemical;

(B) Measures for controlling workers' exposure to the chemical;

(C) Methods of monitoring and analyzing worker exposure to the chemical; and,

(D) Methods of diagnosing and treating harmful exposures to the chemical;

(iv) The request includes a description of the procedures to be used to maintain the confidentiality of the disclosed information; and,

(v) The health professional, and the employer or contractor of the services of the health professional (i.e. downstream employer, labor organization, or individual employee), employee, or designated representative, agree in a written confidentiality agreement that the health professional, employee, or designated representative, will not use the trade secret information for any purpose other than the health need(s) asserted and agree not to release the information under any circumstances other than to OSHA, as provided in paragraph (i)(6) of this section, except as authorized by the terms of the agreement or by the chemical manufacturer, importer, or employer.

(4) The confidentiality agreement authorized by paragraph (i)(3)(iv) of this section:

(i) May restrict the use of the information to the health purposes indicated in the written statement of need;

(ii) May provide for appropriate legal remedies in the event of a breach of the agreement, including stipulation of a reasonable pre-estimate of likely damages; and,

(iii) May not include requirements for the posting of a penalty bond.

(5) Nothing in this standard is meant to preclude the parties from pursuing non-contractual remedies to the extent permitted by law.

(6) If the health professional, employee, or designated representative receiving the trade secret information decides that there is a need to disclose it to OSHA, the chemical manufacturer, importer, or employer who pro-

vided the information shall be informed by the health professional, employee, or designated representative prior to, or at the same time as, such disclosure.

(7) If the chemical manufacturer, importer, or employer denies a written request for disclosure of a specific chemical identity, the denial must:

(i) Be provided to the health professional, employee, or designated representative, within thirty days of the request;

(ii) Be in writing;

(iii) include evidence to support the claim that the specific chemical identity is a trade secret;

(iv) State the specific reasons why the request is being denied; and,

(v) Explain in detail how alternative information may satisfy the specific medical or occupational health need without revealing the specific chemical identity.

(8) The health professional, employee, or designated representative whose request for information is denied under paragraph (i)(3) of this section may refer the request and the written denial of the request to OSHA for consideration.

(9) When a health professional, employee, or designated representative refers the denial to OSHA under paragraph (i)(8) of this section, OSHA shall consider the evidence to determine if:

(i) The chemical manufacturer, importer, or employer has supported the claim that the specific chemical identity is a trade secret;

(ii) The health professional, employee, or designated representative has supported the claim that there is a medical or occupational health need for the information; and,

(iii) The health professional, employee, or designated representative has demonstrated adequate means to protect the confidentiality.

(10) (i) If OSHA determines that the specific chemical identity requested under paragraph (i) (3) of this section is not a *bona fide* trade secret, or that it is a trade secret, but the requesting health professional, employee, or designated representative has a legitimate medical or occupational health need for the information, has executed a written confidentiality agreement, and has shown adequate means to protect the confidentiality of the information, the chemical manufacturer, importer, or employer will be subject to citation by OSHA.

(ii) If a chemical manufacturer, importer, or employer demonstrates to OSHA that the execution of a confidentiality agreement would not provide sufficient protection against the potential harm from the unauthorized disclosure of a trade secret specific chemical identity, the Assistant Secretary may issue such orders or impose such additional limitations or conditions upon the disclosure of the requested chemical information as may be appropriate to assure that the occupational health services are provided without an undue risk of harm to the chemical manufacturer, importer, or employer.

(11) If a citation for a failure to release specific chemical identity information is contested by the chemical manufacturer, importer, or employer, the matter will be adjudicated before the Occupational Safety and Health Review Commission in accordance with the Act's enforcement scheme and the applicable Commission rules of procedure. In accordance with the Commission rules, when a chemical manufacturer, importer, or employer continues to withhold the information during the contest, the Administrative Law Judge may review the citation and supporting documentation *in camera* or issue appropriate orders to protect the confidentiality or such matters.

(12) Notwithstanding the existence of a trade secret claim, a chemical manufacturer, importer, or employer shall, upon request, disclose to the Assistant Secretary any information which this section requires the chemical manufacturer, importer, or employer to make available. Where there is a trade secret claim, such claim shall be made no later than at the time the information is provided to the Assistant Secretary so that suitable determinations of trade secret status can be made and the necessary protections can be implemented.

(13) Nothing in this paragraph shall be construed as requiring the disclosure under any circumstances of process or percentage of mixture information which is a trade secret.

(j) *Effective dates.* (1) Chemical manufacturers, importers, and distributors shall ensure that material safety data sheets are provided with the next shipment of hazardous chemicals to employers after September 23, 1987.

(2) Employers in the non-manufacturing sector shall be in compliance with all provisions of this section by May 23, 1988. (Note: Employers in the manufacturing sector (SIC Codes 20 through 39) are already required to be in compliance with this section.)

Appendix A to § —— Health Hazard Definitions (*Mandatory*)

Although safety hazards related to the physical characteristics of a chemical can be objectively defined in terms of testing requirements (e.g. flammability), health hazard definitions are less precise and more subjective. Health hazards may cause measurable changes in the body—such as decreased pulmonary function. These charges are generally indicated by the occurrence of signs and symptoms in the exposed employees—such as shortness of breath, a non-measurable, subjective feeling. Employees exposed to such hazards must be apprised of both the change in

body function and the signs and symptoms that may occur to signal that change.

31884 The determination of occupational health hazards is complicated by the fact that many of the effects or signs and symptoms occur commonly in non-occupationally exposed populations, so that effects of the exposure are difficult to separate from normally occurring illnesses. Occasionally, a substance causes an effect that is rarely seen in the population at large, such as angiosarcomas caused by vinyl chloride exposure, thus making it easier to ascertain that the occupational exposure was the primary causative factor. More often, however, the effects are common, such as lung cancer. The situation is further complicated by the fact that most chemicals have not been adequately tested to determine their health hazard potential, and data do not exist to substantiate these effects.

There have been many attempts to categorize effects and to define them in various ways. Generally, the terms "acute" and "chronic" are used to delineate between effects on the basis of severity or duration. "Acute" effects usually occur rapidly as a result of short-term exposures, and are of short duration. "Chronic" effects generally occur as a result of long-term exposure, and are of long duration.

The acute effects referred to most frequently are those defined by the American National Standards Institute (ANSI) standard for Precautionary Labeling of Hazardous Industrial Chemicals (Z129.1-1982)—irritation, corrosivity, sensitization and lethal dose. Although these are important health effects, they do not adequately cover the considerable range of acute effects which may occur as a result of occupational exposure, such as, for example, narcosis.

Similarly, the term chronic effect is often used to cover only carcinogenicity, teratogenicity, and mutagenicity. These effects are obviously a concern in the workplace,

but again, do not adequately cover the area of chronic effects, excluding, for example, blood dyscrasias (such as enemia), chronic bronchitis and liver atrophy.

The goal of defining precisely, in measurable terms, every possible health effect that may occur in the workplace as a result of chemical exposures cannot realistically be accomplished. This does not negate the need for employees to be informed of such effects and protected from them. Appendix B, which is also mandatory, outlines the principles and procedures of hazardous assessment.

For purposes of this section, any chemicals which meet any of the following definitions, as determined by the criteria set forth in Appendix B are health hazards:

1. *Carcinogen:* A chemical is considered to be a carcinogen if:

(a) It has been evaluated by the International Agency for Research on Cancer (IARC), and found to be a carcinogen or potential carcinogen; or

(b) It is listed as a carcinogen or potential carcinogen in the *Annual Report on Carcinogens* published by the National Toxicology Program (NTP) (latest edition); or,

(c) It is regulated by OSHA as a carcinogen.

2. *Corrosive:* A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. For example, a chemical is considered to be corrosive if, when tested on the intact skin of albino rabbits by the method described by the U.S. Department of Transportation in Appendix A to 49 CFR Part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of four hours. This term shall not refer to action on inanimate surfaces.

3. *Highly toxic:* A chemical falling within any of the following categories:

(a) A chemical that has a median lethal dose (LD_{50}) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

(b) A chemical that has a median lethal dose (LD_{50}) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.

(c) A chemical that has a median lethal concentration (LC_{50}) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

4. *Irritant:* A chemical, which is not corrosive, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of 16 CFR 1500.41 for four hours exposure or by other appropriate techniques, it results in an empirical score of five or more. A chemical is an eye irritant if so determined under the procedure listed in 16 CFR 1500.42 or other appropriate techniques.

5. *Sensitizer*: A chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical.

6. *Toxic.* A chemical falling within any of the following categories:

(a) A chemical that has a median lethal dose (LD_{50}) of more than 50 milligrams per kilogram but not more than 500 milligrams per kilogram of body weight when

administered orally to albino rats weighing between 200 and 300 grams each.

(b) A chemical that has a median lethal dose (LD_{50}) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between two and three kilograms each.

(c) A chemical that has a median lethal concentration (LC_{50}) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than two milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.

7. *Target organ effects.* The following is a target organ categorization of effects which may occur, including examples of signs and symptoms and chemicals which have been found to cause such effects. These examples are presented to illustrate the range and diversity of effects and hazards found in the workplace, and the broad scope employers must consider in this area, but are not intended to be all-inclusive.

a. Hepatotoxins: Chemicals which produce liver damage

Signs & Symptoms: Jaundice; liver enlargement

Chemicals: Carbon tetrachloride; nitrosamines

b. Nephrotoxins: Chemicals which produce kidney damage

Signs & Symptoms: Edema; proteinuria

Chemicals: Halogenated hydrocarbons; uranium

c. Neurotoxins: Chemicals which produce their primary toxic effects on the nervous system

Signs & Symptoms: Narcosis: behavioral changes; decrease in motor functions

Chemicals: Mercury; carbon disulfide

d. Agents which act on the blood or hematopoietic system: Decrease hemoglobin function; deprive the body tissues of oxygen

Signs & Symptoms: Cyanosis; loss of consciousness

Chemicals: Carbon monoxide; cyanides

e. Agents which damage the lung: Chemicals which irritate or damage the pulmonary tissue

Signs & Symptoms: Cough; tightness in chest; shortness of breath

Chemicals: Silica; asbestos

f. Reproductive toxins: Chemicals which affect the reproductive capabilities including chromosomal damage (mutations) and effects on fetuses (teratogenesis)

Signs & Symptoms: Birth defects; sterility

Chemicals: Lead; DBCP

g. Cutaneous hazards: Chemicals which affect the dermal layer of the body

Signs & Symptoms: Defatting of the skin; rashes; irritation

Chemicals: Ketones; chlorinated compounds

h. Eye hazards: Chemicals which affect the eye or visual capacity

Signs & Symptoms: Conjunctivitis; corneal damage

Chemicals: Organic solvents; acids

Appendix B to § ——, Hazard Determination (Mandatory)

The quality of a hazard communication program is largely dependent upon the adequacy and accuracy of the hazard determination. The hazard determination requirement of this standard is performance-oriented. Chemical manufacturers, importers, and employers evaluating chemicals are not required to follow any specific methods for 31885 determining hazards, but they must be able to demonstrate that they have adequately ascertained the hazards of the chemicals produced or imported in accordance with the criteria set forth in this Appendix.

Hazard evaluation is a process which relies heavily on the professional judgment of the evaluator, particularly in the area of chronic hazards. The performance-orientation of the hazard determination does not diminish the duty of the chemical manufacturer, importer or employer to conduct a thorough evaluation, examining all relevant data and producing a scientifically defensible evaluation. For purposes of this standard, the following criteria shall be used in making hazard determinations that meet the requirements of this standard.

1. *Carcinogenicity*: As described in paragraph (d)(4) and Appendix A of this section, a determination by the National Toxicology Program, the International Agency for Research on Cancer, or OSHA that a chemical is a carcinogen or potential carcinogen will be considered conclusive evidence for purposes of this section.

2. *Human data*: Where available, epidemiological studies and case reports of adverse health effects shall be considered in the evaluation.

3. *Animal data*: Human evidence of health effects in exposed populations is generally not available for the majority of chemicals produced or used in the workplace. Therefore, the available results of toxicological testing in

animal populations shall be used to predict the health effects that may be experienced by exposed workers. In particular, the definitions of certain acute hazards refer to specific animal testing results (see Appendix A).

4. *Adequacy and reporting of data.* The results of any studies which are designed and conducted according to established scientific principles, and which report statistically significant conclusions regarding the health effects of a chemical, shall be a sufficient basis for a hazard determination and reported on any material safety data sheet. The chemical manufacturer, importer, or employer may also report the results of other scientifically valid studies which tend to refute the findings of hazard.

Appendix C to § —— Information Sources (Advisory)

The following is a list of available data sources which the chemical manufacturer, importer, distributor, or employer may wish to consult to evaluate the hazards of chemicals they produce or import:

—Any information in their own company files, such as toxicity testing results or illness experience of company employees.

—Any information obtained from the supplier of the chemical, such as material safety data sheets or product safety bulletins.

—Any pertinent information obtained from the following source list (latest editions should be used):

Condensed Chemical Dictionary

Van Nostrand Reinhold Co., 135 West 50th Street, New York, NY 10020.

The Merck Index: An Encyclopedia of Chemicals and Drugs

Merck and Company, Inc., 126 E. Lincoln Ave., Rahway, NJ 07065.

IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man

Geneva: World Health Organization, International Agency for Research on Cancer, 1972-Present, (Multivolume work). Summaries are available in supplement volumes. 49 Sheridan Street, Albany, NY 12210.

Industrial Hygiene and Toxicology, by F.A. Patty

John Wiley & Sons, Inc., New York, NY (Multivolume work).

Clinical Toxicology of Commercial Products

Gleason, Gosselin, and Hodge

Casarett and Doull's Toxicology; The Basic Science of Poisons

Doull, Klaassen, and Amdur, Macmillan Publishing Co., Inc., New York, N.Y.

Industrial Toxicology, by Alice Hamilton and Harriet L. Hardy

Publishing Sciences Group, Inc., Acton, MA.

Toxicology of the Eye, by W. Morton Grant

Charles C. Thomas, 301-327 East Lawrence Avenue, Springfield, IL.

Recognition of Health Hazards in Industry

William A. Burgess, John Wiley and Sons, 605 Third Avenue, New York, NY 10158.

Chemical Hazards of the Workplace

Nick H. Proctor and James P. Hughes, J.P. Lipincott Company, 6 Winchester Terrace, New York, NY 10022.

Handbook of Chemistry and Physics

Chemical Rubber Company, 18901 Cranwood Parkway, Cleveland, OH 44128.

Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environment and Biological Exposure Indices with Intended Changes

American Conference of Governmental Industrial Hygienists (ACGIH). 6500 Glenway Avenue, Bldg. D-5, Cincinnati, OH 45211.

Information on the physical hazards of chemicals may be found in publications of the National Fire Protection Association, Boston, MA.

Note.—The following documents may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

Occupational Health Guidelines

NIOSH/OSHA (NIOSH Pub. No. 81-123)

NIOSH Pocket Guide to Chemical Hazards

NIOSH Pub. No. 85-114

Registry of Toxic Effects of Chemical Substances

NIOSH Pub. No. 80-102

Miscellaneous Documents published by the National Institute for Occupational Safety and Health:

Criteria documents.

Special Hazard Reviews.

Occupational Hazard Assessments.

Current Intelligence Bulletins.

OSHA's General Industry Standards (29 CFR Part 1910)

NTP Annual Report on Carcinogens and Summary of the Annual Report on Carcinogens.

National Technical Information Service (NTIS). 5285 Port Royal Road, Springfield, VA 22161; (703) 487-4650.

BIBLIOGRAPHIC DATA BASES

Service provider	File name
Bibliographic Retrieval Services (BRS), 1200 Route 7, Latham, NY 12110.	Biosis Previews CA Search Medlars NTIS Hazardline American Chemical Society Journal Excerpta Medica IRCS Medical Science Journal Pre-Med Intl Pharmaceutical Abstracts Paper Chem
Lockheed—DIALOG Information Service, Inc., 3460 Hillview Avenue, Palo Alto, CA 94304.	Biosis Prev. Files CA Search Files CAB Abstracts Chemical Exposure Chemname Chemsis Files Chemzero Embase Files Environmental Bibliographies Enviroline Federal Research in Progress IRL Life Science Collection NTIS Occupational Safety and Health (NIOSH) Paper Chem
SDC—Orbit, SDC Information Service, 2500 Colorado Avenue, Santa Monica, CA 90406.	CAS Files Chemdex, 2, 3 NTIS
National Library of Medicine, Department of Health and Human Services, Public Health Service, National Institutes of Health, Bethesda, MD 20209.	Hazardous Substances Data Bank (NSDB) Medline files Toxline Files Cancerlit RTECS Chemline

BIBLIOGRAPHIC DATA BASES—Continued

Service provider	File name
Pergamon International Information Corp., 1340 Old Chain Bridge Rd., McLean, VA 22101.	Laboratory Hazard Bulletin
Questel, Inc., 1625 Eye Street, NW., Suite 818, Washington, D.C. 20006.	CIS/ILO Cancernet
Chemical Information System ICI (ICIS), Bureau of National Affairs, 1133 15th Street, NW., Suite 300, Washington, DC 20005.	Structure and Nomenclature Search System (SANSS) Acute Toxicity (RTECS) Clinical Toxicology of Commercial Products Oil and Hazardous Materials Technical Assistance Data System CCRIS CESARS
Occupational Health Services, 400 Plaza Drive, Secaucus, NJ 07094.	MSDS Hazardline

Appendix D to § —— Definition of "Trade Secret" (Mandatory)

The following is a reprint of the *Restatement of Torts* section 757, comment *b* (1939):

b. *Definition of trade secret.* A trade secret may consist of any formula, pattern, device or compilation of information which is used in one's business, and which gives him an opportunity to obtain an advantage over competitors who do not know or use it. It may be a formula for a chemical compound, a process of manufacturing, treating or preserving materials, a pattern for a machine or other device, or a list of customers. It differs from other secret information in a business (see § 759 of the *Restatement of Torts* which is not included in this Appendix) in that it is not simply information as to single or ephemeral events in the conduct of the business, as, for example, the amount or 31886 other terms of a secret bid for a contract or the salary of certain em-

ployees, or the security investments made or contemplated, or the date fixed for the announcement of a new policy or for bringing out a new model or the like. A trade secret is a process or device for continuous use in the operations of the business. Generally it relates to the production of goods, as, for example, a machine or formula for the production of an article. It may, however, relate to the sale of goods or to other operations in the business, such as a code for determining discounts, rebates or other concessions in a price list or catalogue, or a list of specialized customers, or a method of bookkeeping or other office management.

Secrecy. The subject matter of a trade secret must be secret. Matters of public knowledge or of general knowledge in an industry cannot be appropriated by one as his secret. Matters which are completely disclosed by the goods which one markets cannot be his secret. Substantially, a trade secret is known only in the particular business in which it is used. It is not requisite that only the proprietor of the business know it. He may, without losing his protection, communicate it to employees involved in its use. He may likewise communicate it to others pledged to secrecy. Others may also know of it independently, as, for example, when they have discovered the process or formula by independent invention and are keeping it secret. Nevertheless, a substantial element of secrecy must exist, so that, except by the use of improper means, there would be difficulty in acquiring the information. An exact definition of trade secret is not possible. Some factors to be considered in determining whether given information is one's trade secret are: (1) The extent to which the information is known outside of his business; (2) the extent to which it is known by employees and others involved in his business; (3) the extent of measures taken by him to guard the secrecy of the information; (4) the value of the information to him and his

competitors; (5) the amount of effort or money expended by him in developing the information; (6) the ease or difficulty with which the information could be properly acquired or duplicated by others.

Novelty and prior art. A trade secret may be a device or process which is patentable; but it need not be that. It may be a device or process which is clearly anticipated in the prior art or one which is merely a mechanical improvement that a good mechanic can make. Novelty and invention are not requisite for a trade secret as they are for patentability. These requirements are essential to patentability because a patent protects against unlicensed use of the patented device or process even by one who discovers it properly through independent research. The patent monopoly is a reward to the inventor. But such is not the case with a trade secret. Its protection is not based on a policy of rewarding or otherwise encouraging the development of secret processes or devices. The protection is merely against breach of faith and reprehensible means of learning another's secret. For this limited protection it is not appropriate to require also the kind of novelty and invention which is a requisite of patentability. The nature of the secret is, however, an important factor in determining the kind of relief that is appropriate against one who is subject to liability under the rule stated in this section. Thus, if the secret consists of a device or process which is a novel invention, one who acquires the secret wrongfully is ordinarily enjoined from further use of it and is required to account for the profits derived from his past use. If, on the other hand, the secret consists of mechanical improvements that a good mechanic can make without resort to the secret, the wrongdoer's liability may be limited to damages, and an injunction against future use of the improvements made with the aid of the secret may be inappropriate.

8. Section 1915.97 would be revised to read as follows:

§ 1915.97 Health and sanitation.

The provisions of this section shall apply to ship reparing, shipbuilding and shipbreaking, except where indicated otherwise.

(a) The employer shall provide all necessary controls, and the employees shall be protected by suitable personal protective equipment against the hazards identified under § 1915.99 of this part and those hazards for which specific precautions are required in Subparts B, C, and D of this part.

(b) The employer shall provide adequate washing facilities for employees engaged in the application of paints or coatings or in other operations where contaminants can, by ingestion or absorption, be detrimental to the health of the employees. The employer shall encourage good personal hygiene practices by informing the employees of the need for removing surface contaminants by thorough washing or hands and face prior to eating or smoking.

(c) The employer shall not permit employees to eat or smoke in areas undergoing surface preparation or preservation or where shipbreaking operations produce atmospheric contaminants.

(d) The employer shall not permit employees engaged in ship repair work on a vessel to work in the immediate vicinity of uncovered garbage and shall ensure that employees working beneath or on the outboard side of a vessel are not subject to contamination by drainage or waste from overboard discharges.

(e) No minor under 18 years of age shall be employed in shipbreaking or related employments.

9. Section 1928.21 would be amended by adding paragraph (a)(5) as follows:

§ 1923.21 Applicable standards in 29 CFR Part 1910.

(a) * * *

(5) Hazard communication—§ 1910.1200.

* * * *

[FR Doc. 87-19137 Filed 8-19-87; 8:45 am]

BILLING CODE 4510-26-M

STATE REGULATIONS

SUBCHAPTER 5. LABELING CONTAINERS

8:59-5.1 General provisions

(a) By March 1, 1985, every container at an employer's facility containing a hazardous substance shall bear a label indicating the chemical name and Chemical Abstracts Service number of the hazardous substance or the trade secret registry number assigned to the hazardous substance. Common names specified in N.J.A.C. 8:59-5.7 may be substituted for the chemical name of the substance.

(b) By March 1, 1985, every container at an employer's facility in which more than one percent of the content of the container are unknown, shall bear a label stating "Contents Unknown" or "Contents Partially Unknown", as appropriate, in addition to other labeling required by N.J.A.C. 8:59-5.

(c) By August 29, 1986, every container at an employer's facility shall bear a label indicating the chemical name and Chemical Abstracts Service number of all hazardous substances in the container, and all other substances which are among the five most predominant substances in the container, or the trade secret registry number assigned to the substance. Common names specified in N.J.A.C. 8:59-5.7 may be substituted for the chemical name of the substance.

(d) Labels shall be affixed to containers before employees, open the containers or within five working days of the container's arrival at the facility, whichever is sooner. In warehouses, storage or transfer facilities associated with employers covered by this Act, where containers are not opened, labeling required by or consistent with United States Department of Transportation, 49 CFR Parts 172.101 and 172.102 requirements, may be used.

(e) Laboratories or other facilities which receive containers with unknown materials or old pressurized gas cylinders with unknown contents for analysis of the contents shall label the containers as substances are identified. In the interim period until the contents are identified, these containers shall be labeled in accordance with N.J.A.C 8:59-5.1(b).

(f) Containers of materials for which the employer does not know the contents, and the manufacturer is unknown or no longer in business, shall be labeled pursuant to the Act or the Federal Resource Conservation and Recovery Act. The employer shall be responsible for determining the components of the container and attaching appropriate labeling.

(g) When an employer receives information that allows it to identify the chemical name and Chemical Abstracts Service number of the components of any product in its facility, it shall label the appropriate containers pursuant to (a), (c), (d) and (e) above.

(h) Reaction vessels are containers in which a reaction or mixing takes place which do not meet the definition of process container Reaction vessels shall contain labels which identify the substances which are added to the vessel and removed from the vessel. These labels may be placed on an adjoining wall or post in close proximity to the reaction vessel. Batch sheets or operating manuals which contain the information required for labeling in N.J.A.C. 8:59-5.1(a), (b), and (c) may be placed on an adjoining wall or post in close proximity to the reaction vessel to meet the requirement of this section.

(i) Containers which are smaller than 56.7 grams (2 ounces) may be labeled by means of a code or number system if the code or number system will allow the employees free and ready access at all times to a fact sheet which will provide the employee with the chemical name or common name permitted by N.J.A.C. 8:59-5.7, and

Chemical Abstracts Service number of the substance contained in the container, or the trade secret registry number assigned to the substance, allow the employee access to this information without the permission or assistance of management, and be available to the employee at close proximity to his specific job location or locations.

(j) An employer shall not be precluded from including on the label an appropriate hazard warning and the name and address of the substance manufacturer, importer, or other responsible party.

8:59-5.2 Pipelines

(a) Employers shall be required to label pipelines only at the valve or valves located at the point at which a substance enters a facility's pipeline system, and at normally operated valves, outlets, vents, drains and sample connections designed to allow the release of a substance from the pipeline. "Normally operated" means those valves, outlets, vents, drains and sample connections designed to allow the release of a substance from a pipeline which releases substances at least once during a 24 hour period or in connection with repairs or maintenance at least once per month. Where a series of multiple valves are in close proximity on a single pipeline connected to a single process container, only one valve out of the series need be labeled.

(b) Valves, outlets, vents and drains which control the emission or discharge of any solid, liquid, semi-solid or gaseous waste material from a facility shall be labeled. The information required on a label pursuant to the Resource Conservation and Recovery Act (RCRA) may be substituted for the information required by N.J.A.C. 8:59-5.1, even though the employer is not regulated by RCRA.

8:59-5.3 Research and development laboratories

Employers may label containers in a research and development laboratory by means of a code or number system, if the code or number system will enable an employee

to readily make a cross reference to a hazardous substance fact sheet or documentary material retained on file by the employer at the facility which will provide the employee with the chemical name or common name permitted by N.J.A.C. 8:59-5.7, and Chemical Abstracts Service number of the substance contained in the container, or the trade secret registry number assigned to the substance. The code or number system shall be designed to allow the employee free and ready access at all times to the chemical name and Chemical Abstracts Service number of the substance in the container, shall be designed to allow the employee access to this information without the permission or assistance of management, and shall be available to the employee at close proximity to his specific job location or locations.

8:59-5.4 Mixtures

(a) If a container contains a mixture, an employer shall label the container according to N.J.A.C. 8:59-5.

(b) For those hazardous substances other than special health hazard substances whose only references sources on the Workplace Hazardous Substance List are the United States Department of Transportation's Hazardous Materials Tables (source #3) and the National Fire Protection Association's National Fire Codes (source #15), labeling is required only if those substances are among the five most predominant substances contained in the mixture.

8:59-5.5 Exceptions to labeling requirements

(a) The labeling requirements of N.J.A.C. 8:59-5.1 shall not apply to containers affixed with labels pursuant to the requirements of the Federal Insecticide, Fungicide, and Rodenticide Act, 61 Stat. 163 (7 U.S.C. 121 et al.)

(b) Containers labeled with shipping names of specific substances with identification numbers from the United States Department of Transportation's Hazardous Materials Tables, Title 49 Code of Federal Regulations

Parts 172.101, columns 2 and 3A, and 172.102, columns 2 and 4 may be substituted for the information required by N.J.A.C. 8:59-5.1 if the name on the container is identical to the chemical or common name on the Workplace Substance List.

(c) Containers containing waste material shall be labeled. The information required on a label pursuant to the Federal Resources Conservation and Recovery Act (RCRA) may be substituted for the information required by N.J.A.C. 8:59-5.1, even though the employer is not regulated by RCRA.

(d) The information required on a label for a drug, cosmetic, food, flavor or fragrance pursuant to the Federal Food, Drug and Cosmetic Act (FDCA) may be substituted for the information required by N.J.A.C. 8:59-5.1. This exception shall apply to all containers where the name of all hazardous and other substances of active, excipient, and "inactive" chemicals as defined by FDCA are included on the label according to N.J.A.C. 8:59-5.1 (a) and (c). If all active, excipient and "inactive" chemicals are not included on the label then this exception shall apply only to containers which are five gallons (18.9 liters) or smaller. An employer shall make available to employees on request, all hazardous substance fact sheets prepared by the department relevant to the above products, including hazardous substance fact sheets on inactive ingredients as defined by the FDCA.

(e) Containers containing petroleum process streams shall be labeled. Labels for petroleum process streams may contain Chemical Abstracts Service numbers and their corresponding names included in the Toxic Substances Control Act Chemical Substances Inventory (EPA, May 1979) or in the Cumulative Supplements instead of the information required by N.J.A.C. 8:59-5.1. In addition, any substance in sources #1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 and 14, shall be indicated on the label. However, aliphatic hydrocarbons in sources #1, 2, 4, 5, 6, 7, 8, 9,

10, 11, 12, 13 and 14 other than n-hexane, need not be included on the label. An employer shall maintain and make readily accessible to employees a document that describes and identifies the contents of petroleum process streams. An employer shall make available to employees on request, all hazardous substance fact sheets prepared by the department relevant to a process stream.

(f) Electrical equipment containing dielectric fluid may be labeled according to Section 761 of the Federal Toxic Substances Control Act.

(g) Gas utility pipelines in transmission and distribution systems that meet the United States Department of Transportation's Minimum Federal Standards for Gas Lines may be labeled pursuant to those standards. An employer shall maintain and make readily accessible to employees a document that describes and identifies the contents of gas utility pipelines. An employer shall make available to employees on request, all hazardous substance fact sheets prepared by the department relevant to a gas utility pipeline.

(h) Containers containing radioactive materials regulated by the Atomic Energy Act and the Nuclear Regulatory Commission may be labeled according to regulations promulgated by the Nuclear Regulatory Commission pursuant to the Atomic Energy Act.

8:59-5.6 Exclusions from the requirement to label

(a) Containers containing the following categories of hazardous or other substances shall be exempt from the requirements of labeling:

1. Any article containing a hazardous or other substance if the hazardous or other substance is present in a solid form and is not used in a manner which changes its physical form, and which does not pose any acute or chronic health hazard to an employee exposed to it.

2. Any hazardous or other substance constituting less than one percent of a mixture unless the hazardous or other substance is present in an aggregate amount of 500 pounds or more in a container at a facility;

3. Any hazardous or other substance which is a special health hazard substance constituting less than the threshold percentage established by the Department of Health for that special health hazard substance when present in a mixture; or

4. Any hazardous or other substance present in the same form and concentration as a product packaged for distribution and use by the general public to which an employee's exposure during handling is not significantly greater than a consumer's exposure during the principal use of the toxic or other substance.

(b) Process containers and directly associated piping whose contents change with the same frequency as the contents of the process containers, and sample valves from the process containers and directly associated piping, need not be labeled. This exclusion shall not apply to pipeline labeling requirements in N.J.A.C. 8:59-5.2.

8:59-5.7 Common name

(a) Only common names specified by the department may be substituted for required chemical names on labels.

(b) For hazardous substances listed on the Workplace Hazardous Substance List, the first name shall be considered the common name for the hazardous substance for purposes of labeling containers. If there is only one name listed for a hazardous substance on the Workplace Hazardous Substance List, no other name may be used for purposes of labeling containers.

(c) For substances not listed on the Workplace Hazardous Substance List, any synonym accepted by the Chem-

ical Abstract Service shall be considered the common name for the substance for purposes of labeling containers.

8:59-5.8 **Labels**

(a) A label shall be a sign, emblem, sticker or marker of a durable nature affixed to or stenciled onto a container.

(b) The printing on a label shall be easily readable and not obscured.

PB86-220456

HAZARD COMMUNICATION STANDARD INTERPRETATIONS INDEXES AND LETTERS

U.S. Department of Labor
Washington, DC

Jun 86

U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

Record No.: 2592

JAN 14, 1985

Honorable Charles Serraino
Commissioner
New Jersey Department of Labor
C N 110
Trenton, New Jersey 08625-0110

Dear Commissioner Serraino:

This is in response to your request for an informal review by the Occupational Safety and Health Administration (OSHA) of the New Jersey Worker and Community Right to Know Act in light of the "at least as effective as" criterion set forth in section 18 of the federal Occupational Safety and Health Act of 1970. The comments set forth below are based on a comparison of the Right to Know Act with federal OSHA's standard on Hazard Communication, 29 CFR §§ 1910.1200 et seq, a review which is comparable to OSHA review of a standard submitted as part of an existing State plan. In the event a plan were to be submitted by New Jersey, the plan would not only have to contain "at least as effective as" standards but would have to meet all the remaining criteria set forth in 29 CFR part 1902 regarding an "at least as effective as" program for administration and enforcement of standards. In addition, the extent of such a plan's coverage would have to be shown to be "administratively practicable" as required by 29 CFR 1902.2(c). We have serious doubt as to whether a proposed plan limited in scope to hazard communication, and affording no protection from hazards covered by other OSHA standards, could be found to be administratively practicable. Following are our comments on the standard's aspect of the New Jersey Right to Know Act.

Several definitions contained in the Right to Know Act (N.J.S.A. 34:5A-3) are more restrictive in scope than corresponding provisions of the federal standard and thus render the State law less effective. The State law's definition of "container" excludes "process containers" and thus excludes many containers from labeling required under the federal standard. The definition of the term "employee representative" limits access to information pursuant to the State statute to the employee's attorney or certified collective bargaining agent, or to the parent or legal guardian if the employee is a minor; no corresponding limitation is contained in the federal standard. The definition of "hazardous substance" found in the Right to Know Act is extremely limited, and contains several exemptions the effect of which on coverage is difficult to determine because terms, such as "article" and "acute" or "chronic," are not defined. It would appear that the state statute would apply to approximately 2,000 substances, compared to as many as 60,000 substances covered by the federal hazard communication standard.

In addition, the definition of "hazardous substance fact sheet" does not require these fact sheets to include threshold limit values, nor a statement whether the substance has been found to be a suspect or confirmed carcinogen, as is required federally. There is no clear requirement of fact sheets for mixtures.

The definition of "trade secret" in the federal standard is taken from the Restatement of Torts and states that competitors do not know or use the information to qualify it as eligible for trade secret protection. The State law contains only the provision that the competitors not know the information.

The State provision regarding employee access to hazardous substance fact sheets and workplace surveys (N.J.S.A. 34:5A-12) requires employers to provide such

access within five days, while the federal standard at 29 CFR 1910.1200(g)(8) requires that such information be readily accessible to employees during each work shift. The five day delay makes the state statute significantly less effective than the federal standard in communicating hazard information to employees.

Employee training requirements found in the Right to Know Act (N.J.S.A. 34:5A-13) are less comprehensive and effective than corresponding federal requirements at 29 CFR 1910.1200(h), in that the state does not require an explanation of the requirements of the State law, and omits other detailed training requirements set forth in the federal standard.

The State's special requirements for laboratories (N.J. S.A. 34:5A-25(b)) apply only to research and development laboratories, while federal laboratory requirements at 29 CFR 1910.1200(b)(3) are not so limited. Thus, the State law would require quality control and other in-plant labs to comply with all provisions. The federal laboratory provisions require preservation of labels on incoming containers, accessibility of data sheets, and a training program for laboratories, while the State statute requires only a communication program to assist the fire department in responding to emergencies. State labeling provisions for R&D Laboratories are set forth using the term "may," rather than "shall," and thus do not appear to be mandatory (N.J.S.A. 34:5A-14a, b).

The labeling requirements of the Right to Know Act (N.J. S.A. 34:5A-14a, b) require information only as to the identity of the substance in the container, without requiring hazard warnings or the name and address of the manfacturer as specified federally at 29 CFR 1910.1200(f), thus rendering the state's labeling provisions significantly less effective than the federal. No state provision was found requiring labeling of shipped containers, and there is apparently no specific assurance that recipients would receive appropriately labeled containers. As has already

been noted, the Right to Know Act significantly omits process containers from coverage and there is thus no requirement that such containers be labeled.

The Right-to-Know Act only requires trade secret information to be released to a physician or osteopath when such information is needed for medical diagnosis or treatment (N.J.S.A. 34:5A-15, e). The federal standard requires such information to be disclosed to a treating physision or nurse in the event of a medical emergency (29 CFR 1910.1200(i)(2)), and to a physician, industrial hygienist, toxicologist, or epidemiologist providing medical or other occupational health services to exposed employees (29 CFR 1910.1200(1)(3)). Thus the State's disclosure provisions are much more limited and thus less effective than the federal standard.

Based on the comparisons just described, OSHA believes that the New Jersey Worker and Community Right to Know Act is less effective, in many key respects, than the Federal Hazard Communication standard.

If you have any questions, or if we may be of further assistance, please let us know.

Sincerely,

ROBERT A. ROWLAND
Assistant Secretary

Nov. 21, 1984

Honorable Robert A. Rowland
Assistant Secretary of Labor
Occupational Health Administration
U.S. Department of Labor
200 Constitution Avenue
Suite S2315
Washington, D.C. 20210

Dear Secretary Rowland:

Pursuant to our informal conversations with your staff, we are enclosing a copy of the New Jersey Worker and Community Right to Know Act for your consideration under the Occupational Safety and Health (OSH) Act. We would appreciate your evaluation as to whether our State Law meets the "at least as effective" standard set forth under the OSH Act.

I am looking forward to your reply and would appreciate hearing from you at your earliest convenience.

Sincerely,

CHARLES SERRAINO
Commissioner
State of New Jersey
Department of Labor
C N 110
Trenton, New Jersey 08625-0110

APPENDIX E

EXXON CORPORATION

*Affiliates and Subsidiaries—Not Wholly-Owned**

Abu Dhabi Petroleum Company Limited
Ace Polymer Co., Ltd.
Aditivos Orinoco, C. A.
Adria-Wien Pipeline Gesellschaft mit beschrankter Haftung
Aircraft Fuel Supply B. V.
Aishin Sekiyu K. K.
Alberta Products Pipe Line Ltd.
Al-Jubail Petrochemical Company
Altona Petrochemical Company Limited
Alyeska Pipeline Service Company
Arabian American Oil Company
Aramco Overseas Company
Aramco Services Company
Asakawa Sekiyu K. K.
Asociacion Civil "Colegio Internacional de Caracas"
Atlas Supply Company
Atlas Supply Company of Canada Limited
Australian Synthetic Rubber Company Limited
Aviation Services Saudi Arabia Limited
Awaji Gas Nenryo Kabushiki Kaisha
Azuma Sekiyu K. K.
BEB Erdgas und Erdoel GmbH, Hannover
BT Asia Securities Limited
B.W.O.C., Inc.
Bangkok Aviation Fuel Services Limited
Banshu Ekika Gas K. K.
Bayerische Erdgasleitung G.m.b.H.
Beaverhill Resources Limited
Bel-Air Entreposage S. A.

* Does not include companies with less than 5% Exxon Ownership.

BRIGITTA Erdgas und Erdoel GmbH, Hanover
Bryan Woodbine Gathering Inc
Byron Creek Collieries (1983) Limited
Carlew Inc.
Carnduff Gas Limited
Cary Chemicals Inc.
Castle Peak Power Company Limited
Champlain Oil Products Limited
Changi Airport Fuel Hydrant Installation Pte. Ltd.
Chuo Sekiyu Hanbai K. K.
Comcor Chemicals Limited
Commercial Polymers Pty. Ltd.
Compania Minera Disputada de Las Condes S.A.
Comptoir Auxiliarie du Petrole
Comptoir Oxonnaxien des Combustibles (C.O.C.)
Computer Centrum Groningen B.V.
DFTG Deutsche Fluessigerdas Terminal GmbH
Daihatsu Sekiyu K.K.
Daiichi Kouyu K. K.
Demulsificantes Del Orinoco, C.A.
Depot Petrolier du Gresivaudan
Depots de Petrole Cotiers
Depots Petrolier de la Corse
Deudan-Holding GmbH
Deutsche Erdgas Transport G.m.b.H.
Deutsche Transalpine Oelleitung G.m.b.H.
Devon Estates Limited
Dixie Pipeline Company
Dukhan Service Company
E S F Limited
Eagle Kenso K.K.
East Japan Oil Development Company, Limited
East Texas Salt Water Disposal Company
Eiko Sekiyu K.K.
Elwerath Erdgas und Erdoel GmbH, Hannover
Elwerath Erdoel und Erdgas AG
Emirates Chemicals Company
Emori Sekiyu K.K.

Emsland-Erdoelleitung G.m.b.H
Energie Marketing Service GmbM (EMS)
Entrepot Petrolier de l'Aveyron (E.P.A.)
Entrepot Petrolier de Mulhouse (E.P.M.)
Erdgas-Verkaufs-Gesellschaft m.b.H.
Esso Chemical Alberta Limited
Esso Energie G.I.E.
Esso Exploration and Production Angola Inc.
Esso Malaysia Berhad
Esso of Canada Limited
Esso Resources Canada Limited
Esso Resources N.W.T. Limited
Esso Resources Ventures Limited
Esso Societe Anonyme Francaise
Esso Standard Tunisie S. A.
Etablissements Cloarec
Exact Reisebyra A/S
Exxon Chemical Pakistan Limited
489061 Ontario Inc.
F. T. Giken Kabushiki Kaisha
Federated Pipe Lines Ltd.
Ferngas Nordbayern G.m.b.H.
Ferngas Salzgitter GmbH
Forjas de Colombia, S. A.
Fuji Kogyo K.K.
Gasunie Engineering B.V.
General Bussan K.K.
General Highway K.K.
General Petrochemical Industries Limited
General Sekiyu K.K.
General Sekiyu Okinawa Hanbai K.K.
General Sekiyu Overseas Ltd.
General Shipping Co. Ltd.
General Unyu Kabushiki Kaisha
Geobutane-Lavera
Gewerkschaft Brassert Erdoel und Erdgas GmbH
Gewerkschaft Erdoel-Raffinerie Deurag-Nerag
Gewerkschaft Gute Hoffnung Erdgas und Erdoel GmbH

Gewerkschaft Kuchenberg Erdgas under Erdoel GmbH
Godoku Sekiyu K.K.
Grande Ecaille Land Company, Inc.
Groupement Immobilier Petrolier
Groupement Liants Routiers du Gard Esso-Viafrance (G.L.R.G.E.V.)
Groupement Petrolier Aviation
Groupement Petrolier de la Cote D'Azur
Groupment Petrolier de Nantes
Groupement Petrolier du Finistere G.I.E.
Hamburger Gaswerke GmbH
Hannoversche Erdoelleitung G.m.b.H.
Hanshin Kyowa Sekiyu K.K.
Hayakawa Sekiyu K.K.
Heinrich Schneider Spedition GmbH
Hiroshima General Gas Juten Kabushiki Kaisha
Hoei Sekiyu K.K.
Hokushin Bussan K.K.
Hokuyu Sekiyu K. K.
Home Energy Company Ltd.
Home Oil Company Limited
Houston Regional Monitoring Corporation
Hydranten-Betriebsgesellschaft
Hydrierwerke Poelitz Aktiengesellschaft
Imperial Oil Limited
Imperial Pipe Line Company, Limited, The
Inada Ekka Gas Kabushiki Kaisha
Industria Acqua Siracusana S.p.A.
Industry Promotion Enterprises Limited
Interprovincial Pipe Line (Alberta) Ltd.
Interprovincial Pipe Line (NW) Ltd.
Interhome Energy Inc.
Intamix Corporation
Intoplane Service Company Limited
Iranian Oil Participants Limited
Iranian Oil Services (Holdings) Limited
Iranian Oil Services Limited
Iraq Petroleum Company, Limited

Iraq Petroleum Pensions, Limited
Japan Butyl Company Limited
Japan Coal Liquefaction Development Company, Ltd.
Jersey Nuclear-Avco Isotopes, Inc.
K.K. Aizu General
K.K. Daimaru
K.K. General Sekiyu Hanbaisho
K.K. Genetech
K.K Hein Sekiyu
K.K. Ito Sekiyuten
K.K. Kanagawa Sekiyu Shokai
K.K. Kyoei Agency
K.K. Kyoei Shosha
K.K. Kyowa Sekiyu Service
K.K. Marugo Izumasa Shoten
K.K. Marutaka Sekiyu
K.K. Nippatsu
K.K. Standard Sekiyu Osaka Hatsubaisho
K.K. Toresen
K.K. Uwano Sekiyu Shokai
K/S Statfjord Transport A/S & Co.
Kabushiki Kaisha Sankyo Plastics
Kai Tak Refuellers Company Limited
Kanto Kygnus Sekiyu Hambai K.K.
Karlsruhe-Stuttgart Rohrleitung Gesellschaft mbH
Kawasaki Kygnus Sekiyu Hambai Kabushiki Kaisha
Keihan Sekiyu K.K.
Keiyo Sekiyu Hanbai K.K.
Kenya Petroleum Refineries Limited
Kibo Sekiyu Hanbai K.K.
Kimura Sekiyu Kabushiki Kaisha
Kinwa Sekiyu K.K.
Kobe Standard Sekiyu K. K.
Kowa Sekiyu K.K.
Kowloon Electricity Supply Company Limited
Kygnus Ekka Gas Kabushiki Kaisha
Kygnus Kosan Kabushiki Kaisha
Kygnus Marketing Service K.K.

Kygnus Sekiyu K. K.
Kyushu Eagle K.K.
LPL Investments, Inc.
Lakehead Pipe Line Company, Inc.
LEAG Aktiengesellschaft feur luzernisches Erdoel
Les Docks des Petroles d'Ambes
Long Beach Oil Development Company
Maasvlakte Coal Terminal B.V.
Maasvlakte Olie Terminal N.V.
Magota Sekiyu K.K.
Mainline Pipelines Limited
Maple Leaf Petroleum Limited
Marugo Gas K.K.
MEGAL FINCO
MEGAL GmbH
Meiji Sekiyu K.K.
MESBIC Financial Corporation of Houston
Metro Fuel Co. Ltd.
Mikawa Bussan K.K.
Minerals Limited
Mittelrheinische Erdgas Transport Gesellschaft mit beschreankter Haftung
Montreal Pipe Line Limited/Les Pipe-Lines Montreal Limitee
Mr. Lube Canada Inc.
Mytex Polymers Incorporated
NAM - K 7 B.V.
NAM - K 14 B.V.
NAM - K 15 B.V.
NAM/CLOMS - K 8/K 11 B.V.
NAM/CLOMS - L 13 B.V.
N. V. Nederlandse Gasunie
NPC Services, Inc.
Nakabayashi Sekiyu K.K.
Nansei Oil Terminal K.K.
Nansei Sekiyu Kabushiki Kaisha
Nanseki Kaihatsu K.K.
Native Venture Capital Co. Ltd

Near East Development Corporation
Nederlandse Aardolie Maatschappij B. V.
Neptune Bulk Terminals (Canada) Ltd.
Nichimo Oil (Bermuda) Co., Ltd.
Nichimo Sekiyu Seisei Kabushiki Kaisha
Nikko Sangyo K.K.
Nippon Unicar K.K.
Nisku Products Pipe Line Company Limited
Nissei Sekiyu Kabushiki Kaisha
Norddeutsche Erdgas-Aufbereitungs G.m.b.H.
Norddeutsche Mineraloelwerke Stettin G.m.b.H.
Nordrheinische Erdgas Transport Gesellschaft mit beschrankter Haftung
Nord-West Oelleitung G.m.b.H.
Noroxo
Northward Developments Ltd.
Nottingham Gas Limited
107580 Canada Inc.
151742 Canada Inc.
159129 Canada Inc.
160440 Canada Limited
160837 Canada Limited
Office Prive d'Assurances et de Courtages
Offshore Medical Support Limited
Oil Field Chemicals Company (Saudi Arabia) Ltd.
Oil Service Company of Iran (Private Company)
Oil Spill Response Limited
Oil Transport Company (Saudi Arabia) Limited
Oldenburgische Erdoel Gesellschaft m.b.H.
Osaka Ashyu Nenryou K.K.
Osaka Propane Gas Hambai Kabushiki Kaisha
Osaka Sekiyu Gas Yuso K. K.
P.A.C. S.A.R.L. (Pinson Allegret-Causse)
P. T. Stanvac Indonesia
Pars Investment Corporation
Peninsula Electric Power Company Limited
Petroleum Refineries (Australia) Proprietary Limited
Petroleum Services (Middle East) Limited
Petrosvibri S.A.

Pipe Line Services, Inc.
Plantation Pipe Line Company
Polder-Seehafen-Harburg GmbH
Portland Pipe Line Corporation
Primaer Oel GmbH
Progras A/S
Raffinerie du Midi S.A.R.L.
Rainbow Pipe Line Company, Ltd.
Redwater Water Disposal Company Limited
Refineria Petrolera Acajutla, S. A.
Rheingas Erdgasleitungs-Gesellschaft m.b.H.
Rochevert Inc.
Rotterdam Antwerpen Pijpleiding (Belgie)
Rotterdam-Antwerpen Pijpleiding (Nederland) N. V.
Ruhrgas Aktiengesellschaft
S.A. du Pipeline a Produits Petroliers sur Territorie Genevois (SAPPRO)
S.A.R.L. Viain
SEAG Aktiengesellschaft fuer schweizerisches Erdoel
S.O.P.-Societa Oleodotti Pandani S. p. A.
Saitama Sekiyu Hanbai K.K.
Sakurajima Futo K.K.
Sanyo Sekiyu K.K.
Saraco S. A.
Saudi Arabian Lube Additives Company Limited
Schubert KG
Scurry-Rainbow Oil Limited
Seibu Kygnus Sekiyu Hambai Kabushiki Kaisha
Seismic Industries A/S
Senpoku Oil Service K.K.
SERAM Societa per Azioni
Servacar Ltd.
Shetah Drilling Limited
Shimoyama Sekiyu K.K.
Shin-Nihon Yukagaku Kogyo K. K.
Shinora Oil K.K.
Shizuoka Kanesho Hambai Kabushiki Kaisha
Smiley Gas Conservation Limited

Sociedad Anonima "Escuela Campo Alegre"
Sociedad de Inversiones de Aviacion
Sociedad Nacional de Oleoductos Ltda.
Societa Italiana per l'Oleodotto Transalpino S.p.A.
Societa per Azioni Raffineria Pada Olii Minerali-SARPOM
Societe Anonyme de Gestion de Stocks de Securite (SAGESS)
Societe Anonyme de la Raffinerie des Antilles
Societe Anonyme des Hydrocarbures
Societe Anonyme "Produits Lubrifiants de Madagascar"-PROLUMA S.A.
Societe Belge de Transport par Pipeline
Societe Civile de Mustapha Algerie
Societe Civile de Participation pour la Destruction des Dechets Industriels (SOCDI)
Societe Civile Immobiliere "Courcelles-Etoile"
Societe Civile Immobiliere Khariessa
Societe Civile Immobiliere "Kleber-Etoile"
Societe Civile Immobiliere "Les Casseaux-Bougainville"
Societe de la Raffinerie d'Alger
Societe de Manutention de Carburants Aviation (S.M.C.A.)
Societe de Manutention de Carburants Aviation Dakar-Yoff, S. A.
Societe de Promotion et de Financement Touristique (CARTHAGO)
Societe d'Entreposage de San-Pedro
Societe des Pipe-Lines de Strasbourg
Societe des Transports Petroliers par Pipe Line
Societe d'Exploitation & de Developpement d'Operations Commerciales
Societe du Caoutchouc Buty (SOCABU)
Societe du Pipe Line de la Raffinerie de Lorraine
Societe du Pipe-Line Mediterranee-Rhone
Societe du Pipeline Sud-Europeen
Societe Esso de Recherches et d'Exploitation Petrolieres Esso Rep
Societe Francaise Exxon Chemical

Societe "Geomines-Caen"
Societe Havraise de Manutention de Produits Petroliers
Societe Hoteliere de la Petite Campagne
Societe Immobiliere Paris-Niel
Societe Ivoirienne d'Operations Petroileres S.A.
Societe Malgache de Raffinage
Societe Reunionnaise d'Entreposage
Socony-Standard-Vacuum Oil Company (Petroleum Maatschappij)
Southern National Gas Development Pty. Ltd.
Standard Kosan Kabushiki Kaisha
Standard Service K.K.
Statfjord Transport A/S
Stockage Geologique de Gaz de Lavera
Sueddeutsche Erdgas Transport Gesellschaft mit beschraenkter Haftung
Sun East Company Ltd.
Sydis, Inc.
Syncrude Canada Ltd.
Synergistics Industries Limited
393193 Alberta Inc.
TAR-Tankanlage Rumlang AG
TBN Tanklager-Betriebsgesellschaft Nurnberg mbH
TGM Tankdienst Gesellschaft Munchen
Taglu Enterprises Ltd.
Taihei Bussan K.K.
Taiko Sekiyu K.K.
Taisei Kogyo Sekiyu Hanbai K.K.
Takahama Kosan Kabushiki Kaisha
Taketsura Yugyo K.K.
Tanaka Sekiyu Hanbai K.K.
Tankanlage A. G., Mellingen
Tanklager Altishausen A. G.
Tanklager Gesellschaft, Koln
Tanklager-Gesellschaft Tegel
Tanklager Lechelles I S.A.
Tanklager Taegerschen AG
Tecnica Quimica Petrolera, S.A. de C. V.

Tecumseh Gas Storage Limited
THUMS Long Beach Company
Thyssengas G.m.b.H.
TIBA Speditions GmbH
Toa Nenryo Kogyo Kabushiki Kaisha
Tohko Plastics Company, Limited
Tohpren Co. Ltd.
Toko Sekiyu K.K.
Tonen Energy and Marine (Singapore) Pte. Ltd.
Tonen Energy International Corp.
Tonen Maintenance K.K.
Tonen Properties Inc.
Tonen Sekiyukagaku Kabushiki Kaisha
Tonen System Plaza Kabsuhiki Kaisha
Tonen System Service Kabushiki Kaisha
Tonen Tanker Kabushiki Kaisha
Tonen Technology K. K.
Tonex Company Limited
Tophus Quen Pty. Ltd.
Towa Compounding Co. Ltd.
Towa Sekiyu K.K.
Toyoshina Film Company, Ltd.
Transalpine Oelleitung in Oesterreich Gesellschaft m.b.H.
Trans-Arabian Pipe Line Company
Transgaz Lavera
Tsurumaru Unyu K.K.
Turkish Petroleum Company, Limited
UBAG-Unterflurbetankungsanlage Fluhafen Zurich
United Industry Development Co., Ltd.
Van Salt Water Disposal Company
W.A.G. Pipeline Proprietary Limited
Wako Jushi Kabushiki Kaisha
Wako Kasei Kabushiki Kaisha
Wartempomp Nederland B.V.
Westdeutsche Erdoelleitungs-G.m.b.H.
Westgas G.m.b.H.
Westgastransport B.V.
Winnipeg Pipe Line Company Limited

Worex S.N.C.
Yasaka Sekiyu K.K.
Yellowstone Pipe Line Company
Yoshiki Sekiyu Kabushiki Kaisha
Yoshimi Gas Kabushiki Kaisha
Yuai Sekiyu K.K.
Yugen Kaisha Nishi Kobe Bosai Center

MERCK & CO., INC.

Affiliates and Subsidiaries—Not Wholly-Owned

Associated Pharmaceutical Products Limited
Astra/Merck, Inc.
Laboratorios Prosalud, S. de R.L. de C.V.
Maquifar S. de R.L. de C.V.
Banyu Pharmaceutical Co., Limited
A.S.C. Service Co., Ltd.
Nippon Merck-Banyu Co., Limited
Prodome Farmaccutica e Exportadora Ltda.
Prodome Quimica e Farmaccutica, Ltda.
Istituto Di Richere Di Biologia Molecolare S.p.A.
Arramara Teoranta
Kelp Industries Pty. Limited
Kronans Droghandel AB
Kiinteisto Oy Irmelinpesa
Merck Shart & Dohme of Pakistan Limited
Merind Limited
Torii & Co., Ltd.
Seelmon Pharmaceutical Co., Ltd.

SHELL OIL COMPANY

Shell Chemical Company is a division of Shell Oil Company, which is owned by Shell Petroleum, Inc., a Delaware Corporation. 60% of the stock of Shell Petroleum, Inc. is owned directly or indirectly by Royal Dutch Petroleum Company, the Hague, The Netherlands, and

the remaining 40% is owned, directly or indirectly, by The "Shell" Transport and Trading Company, PLC, London, England, both Royal Dutch and "Shell" Transport are publicly traded. Shell Chemical Company has no subsidiaries, or affiliates.

C.P. CHEMICALS, INC.

C.P. Chemicals, Inc. is a wholly owned subsidiary of Philipp Brothers Chemicals, Inc., which is not a publicly owned corporation. C.P. Chemicals, Inc. has no subsidiaries, or affiliates.

ESSEX CHEMICAL CORPORATION

Essex Chemical Corporation was purchased by Dow Chemical Company on October 5, 1988, and is now a subsidiary of Dow Chemical Company, a publicly owned company. Essex Chemical Corporation has no subsidiaries, or affiliates.

MAGNESIUM ELEKTRON, INC.

Magnesium Elektron, Inc. is a wholly owned subsidiary of British Aluminum Overseas Investments Ltd., which is a wholly owned subsidiary of British Alcan Aluminum, which is a wholly owned subsidiary of Alcan Aluminum Ltd., which is a publicly owned corporation. Magnesium Elektron, Inc. has no subsidiaries or affiliates.

SCHERING CORPORATION

Shering Corporation is a wholly owned subsidiary of Schering Plough Corporation, a publicly owned corporation. Schering Corporation has no subsidiaries or affiliates.

INGERSOLL-RAND COMPANY

Affiliates and Subsidiaries—Not Wholly-Owned

Simmons-Rand Company
Ingersoll-Rand (India) Ltd.
NEWCO S.p.A.
NSK Torrington Company, Ltd.
Nadella Cuscinetta, S.p.A.
Nadella U.K. Limited
Torrington Nadella
Nadella Wulzager GmbH
Societe Believe Des Roulements a Aiquilles Nadella
ICSA-Industria Cuscinetti S.p.A.
Neumatron
ZEIG
Ingersoll-Jati Malaysia Sdn. Bhd.

INGERSOLL-RAND COMPANY

Affiliates and Subsidiaries—Not Wholly-Owned

Simmon-Rand Company
Ingersoll-Rand (India) Ltd.
NEWCO S.p.A.
NSK Torrington Company, Ltd.

BUSH BOAKE ALLEN, INC.

The parent corporation of Bush Boake Allen, Inc. is Union Camp Corporation. Bush Boake Allen, Inc. has no subsidiaries or affiliates.

H. KOHNSTAMM & CO., INC.

The parent corporation of H. Kohnstamm & Co., Inc. is Universal Foods Corporation. H. Kohnstamm & Co., Inc. has no subsidiaries or affiliates.

ROURE INC.

The parent corporation of Roure Inc. (formerly Roure Bertrand Dupont, Inc.) is F. Hoffman LaRoche & Co., Ltd. Roure Inc. has no subsidiaries or affiliates.

TAKASAGO INTERNATIONAL CORP. (USA)

The parent corporation of Takasago International Corp. (USA) is Takasago (Japan). Takasago International Corp. (USA) has no subsidiaries or affiliates.

UNIVERSAL FRAGRANCE CORPORATION

The parent corporation of Universal Fragrance Corporation is Universal Foods Corporation. Universal Fragrance Corporation has no subsidiaries or affiliates.